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L6: Entry 1 of 1

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TITLE: Tickets sale and exchange system for entertainment events, determines whether a patron owns an electronic ticket for a given event, based on presentation of information pertaining to patron through market system

INVENTOR: CIANCIARUSO, B; NESTOR, T A ; PATRICK, R

PATENT-ASSIGNEE:

ASSIGNEE

CODE

GLOBAL ETICKET EXCHANGE LTD

GLOBN

PRIORITY-DATA: 2000US-0532896 (March 22, 2000)

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ABSTRACTED-PUB-NO: WO 200171669A

**BASIC-ABSTRACT:**

NOVELTY - The patrons having electronic tickets stored in a storage system (22) transfer the electronic tickets to other patron through a trading system (52). An

electronic venue entry system (38) determines whether the patron owns an electronic ticket for a given event based on the presentation of information pertaining to patron, and permits the eligible patron to enter the venue.

USE - For entertainment events such as sporting events, movies, amusement parks.

ADVANTAGE - System performance is improved as patrons are allowed to buy tickets at fair market price and to trade and transfer tickets among one another easily after they have purchased tickets.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of major components of electronic ticket exchange system.

Storage system 22

Electronic venue entry system 38

Trading system 52

CHOSEN-DRAWING: Dwg.2/8

TITLE-TERMS: TICKET SALE EXCHANGE SYSTEM ENTERTAINMENT EVENT DETERMINE ELECTRONIC  
TICKET EVENT BASED PRESENT INFORMATION PERTAIN THROUGH MARKET SYSTEM

DERWENT-CLASS: T01 T05

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Testing for efficiency in lotto markets.

Scott, Frank A., Jr.; Gulley, O. David

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AUTHOR ABSTRACT: State-sponsored lotto games, because they are pari-mutuel and because jackpots with no winner are rolled over into the next drawing, present an excellent opportunity to test for market efficiency. Using data from Massachusetts, Kentucky, and Ohio, we investigate bettors' responses and test for weak-form efficiency. Lotto bets do not have positive net expected returns, thus weak-form efficiency exists. To evaluate strong-form efficiency we utilize the concept of a rational expectations equilibrium. We find that in general lotto bettors' decisions to play generate a level of sales that conform to their original forecasts of expected value.

TEXT:

#### I. INTRODUCTION

When some agents behave irrationally or when some markets operate inefficiently, opportunities exist for others to profit. The profit motive tends to eliminate these opportunities so that markets will tend to be efficient. Interest in the efficiency of markets has led to much empirical testing. An enormous amount of work has been done in the field of finance investigating the efficiency of various financial markets.

Another area where individual rationality and market efficiency are prominent is wagering markets. While the economic significance of financial markets dwarfs that of wagering markets, gambling events offer excellent natural experiments for examining the same sort of economic behavior exhibited in financial markets. One gambling instrument, state-sponsored lotto games, is particularly interesting because of the way the mathematical expected value of a bet is determined.

Lotto differs from most other lottery products because the expected monetary value of a ticket depends on the behavior of other bettors. The expected value also depends on the amount of money rolled over (if any) from the previous drawing's jackpot. Repeated drawings of a lotto game thus present consumers with a range of betting opportunities, some more favorable than others. In deciding whether to purchase tickets, bettors must evaluate the expected monetary return, which requires them to forecast sales. A rational expectations equilibrium in the lotto market will not exist unless bettors' individual forecasts lead to an overall level of sales and ex post expected value that conform to their original expectations.

There are several aspects of lotto that make its study worthwhile. As with financial markets, a significant portion of the population participates. Just like investors, lotto players must formulate expectations about the return on their investment. Expected monetary return depends on the behavior of other players. Unlike investing in the stock market, however, the outcome of the purchase of a lotto ticket is based on objective probabilities. As Thaler and Ziemba 1988, 162 point out, the conditions for learning are optimal in lotto because there is quick and repeated feedback. If an efficient market equilibrium does not exist in lotto, we should not be optimistic about finding one in more complicated financial markets.

The next section introduces the notions of efficiency developed by Fama 1970| and applies them to wagering markets. The third section follows with an explanation of the lotto game and how the expected monetary value of a bet is determined. The fourth section contains tests of the weak form of market efficiency using data from the Kentucky, Massachusetts, and Ohio lotto games. Finally, in the fifth section strong-form efficiency is evaluated using these same games and applying the concept of a rational expectations equilibrium.

Unsurprisingly, we find that very rarely do lotto games offer a positive net expected return, thus meeting the requirements of weak-form efficiency. More importantly, we find general support for the existence of a rational expectations equilibrium in lotto markets. In most cases individual bettors' decisions to play generate a level of sales that conform to their original expectations of the expected value of a lotto ticket.

## II. EFFICIENCY IN WAGERING MARKETS

A capital market is efficient if there are no investment strategies that will yield abnormally high returns. Fama 1970| defines efficiency to mean that security prices reflect all the information contained in a given information set. If the information set is comprised of only historical prices, the market is weak-form efficient. If the information set includes all publicly available information, the market is semi-strong-form efficient. The inclusion of insider information as well makes the market strong-form efficient.

Interest in efficiency has led to much empirical testing of the efficiency of financial markets. Most work finds that markets are by and large efficient, but there are exceptions. LeRoy 1989| and Fama 1991| provide recent surveys of the prodigious research on capital market efficiency. Richard Thaler writes a regular column on "Anomalies" in the Journal Economic Perspectives. Many examples for the column come from the field of finance.

The notion of efficiency can be applied to other areas. Wagering markets present an excellent opportunity to test for efficiency. In considering horseracing and lotteries, Thaler and Ziemba 1988| modify Fama's definitions to fit wagering markets. They define weak efficiency to exist if there is no betting opportunity available that will yield a positive net expected return, i.e., there are no ex ante profitable betting opportunities. Strong efficiency exists if all bets have expected values equal to  $(1-t)$  times the amount bet, where  $t$  is the takeout rate, i.e. the proportion of each bet retained by the betting agency.

Considerable work has been done on the efficiency of the horserace betting market. (1) Snyder 1978| finds that while one can earn above-average returns by following certain betting strategies, positive returns are not to be expected due to the take-out rate collected by the tracks. Ali 1977| finds that bettors tend to overbet longshots and underbet favorites, and in a later paper 1979| finds that different types of bets, which should be identically priced according to the efficient markets model, are in fact so priced. Asch and Quandt 1987| take a similar approach, but find some inefficiencies. Asch, Malkiel, and Quandt 1984| find that net profits may be possible in place and show betting.

Betting on football (American and English) differs slightly from horseracing in that it is not pari-mutuel. Zuber, Gandar, and Bowers 1985| examine betting on National Football League (NFL) games and suggest a strategy that would have produced net positive returns during their sample period. Sauer, Brajer, Ferris, and Marr 1988| apply that strategy to a later period and demonstrate that the inefficiencies disappear. Golec and Tamarkin 1991| also study NFL betting and find that bets on underdogs or home teams are potentially profitable, if transactions costs are low enough. Pope and Peel 1989| investigate betting on English football, where prices are fixed by bookmakers and differ across firms. They find that this market meets the most important criterion for efficiency, namely, no trading rule generates abnormal profits.

Because most lottery products have a negative and unchanging expected monetary return, only limited research has been done on the efficiency of lottery markets. Chernoff 1981|, Thaler and Ziemba 1988|, and Clotfelter and Cook 1989| evaluate the possibility of favorable investment opportunities arising from popular and unpopular numbers in lotto and numbers games. Cook and Clotfelter 1990| derive the relationship between

the expected value of a lotto bet and sales and rollover, but then investigate economies of scale rather than testing for the possibility of abnormal returns.

### III. EXPECTED VALUE OF A LOTTO BET

The three most common lottery products are instant (or scratch-off) games, numbers games, and lotto. To win the grand prize in a typical lotto game, a player buys a one-dollar ticket and must correctly match six numbers drawn randomly without replacement from, say, forty-four numbers. This is called a 6/44 game. The probability of any ticket winning the jackpot in a 6/44 game is 1 out of 7,059,052. (2) Lesser prizes are often awarded for matching fewer than six of the numbers. Lottery agencies take out from 40 to 50 percent of each dollar bet, some of which covers operating costs and the rest of which is turned over to the state.

Lottos have several interesting features. If the jackpot is not won on a given draw, the jackpot (minus prize payments for any partially correct tickets) is rolled over into the jackpot for the next drawing. These rollovers can create jackpots in the tens of millions of dollars. In addition, lottos are pari-mutuel games, which means that there can be multiple winners. Winning ticket holders share equally the grand prize. Finally, the grand prize usually is paid out over a twenty-year period. The advertised jackpot is naturally the undiscounted sum of the twenty annual payments.

The expected monetary value of a \$1 lotto ticket thus depends on several factors, namely, the structure of the game, the value of previous jackpots (if any) rolled over into the current jackpot, and the number of tickets bought in the current drawing. Formally, expected monetary value is

(1)  $EV = \text{probability} \mid \times \text{jackpot} \mid \times \text{share} \mid + \text{expected value of smaller prizes} \mid,$

where

probability = probability that any given ticket matches six numbers drawn randomly without replacement from forty-four possible numbers, i.e., probability that any ticket wins the grand prize;

jackpot = dollar amount rolled over from previous unawarded jackpots plus proportion of current sales not retained by the lottery agency;

share = expected share of the jackpot if a winning ticket is held; and

expected value of smaller prizes = expected value of any smaller prizes awarded to players who correctly match fewer than six of the winning numbers. (3)

If bettors choose their numbers randomly, the probability distribution of winning tickets follows the binomial distribution. (4) Thus in a 6/44 game with one million players each randomly selecting their integer combination, the probability that, for example, exactly two players pick the winning combination is  $n C_{\text{sub}} k \mid p_{\text{sup}} k \mid (1-p)_{\text{sup}} n-k \mid$ , where  $n = 1,000,000$ ,  $k = 2$ , and  $p = 1/7,059,052$ . (5) Since the probability of any ticket matching the six correct numbers is very small, and the number of tickets purchased is typically very large, then the Poisson probability distribution serves as a good approximation to the binomial distribution. As is shown by Saunders and Moody 1987| and also by Cook and Clotfelter 1990|, the expected monetary value of a one-dollar ticket thus becomes

(2)  $EV = 1/N \mid R + (1 - t)N \mid 1 - e_{\text{sup}} -pN \mid,$

where  $N$  is total ticket sales this drawing,  $R$  is rollover,  $t$  is the takeout rate, and  $p$  is the above-defined probability of holding a winning ticket.

The expected monetary value of a lotto bet thus follows well-defined laws of probability and depends on readily available information. Since different values of sales and rollover cause expected value to vary from drawing to drawing, the responses of bettors can be analyzed. In addition to the monetary return of the bet, there also exists a nonmonetary return (i.e. the value derived from watching the numbers being drawn on television, thinking of how any prize money would be spent, etc.) The expected total return thus can be written as

(3)  $E \text{ TR} \mid = EV + E \text{ PL} \mid,$

where  $EV$  is as defined in equation (2) and  $E \text{ PL} \mid$  is the anticipated pleasure or nonmonetary return from betting.

As do previous authors who analyze efficiency in other betting markets, however, we do not attempt to formally incorporate such nonmonetary returns in our empirical analysis. Snyder 1978| points out the difficulty in disentangling, at least statistically, the pecuniary and

nonpecuniary aspects of a bet. He concludes that the presence of these (unmodeled) nonpecuniary aspects merely strengthens his finding of efficiency in the horserace betting market.

We argue that this reasoning can be applied to our analysis as well. We seek to determine if pervasive market forces actually work toward efficiency in lotto markets. Before concluding that lotto markets are inefficient, caution must be exercised, because such a finding may be due to misspecification. The existence of a pleasure component that is not explicitly incorporated may cause us to think that we have discovered an inefficient market when in fact all that we have found is that the pleasure component swamps the financial component.

If, however, we find that even in the presence of a pleasure component which we are not able to incorporate explicitly, lotto markets tend to be efficient, then either of two conclusions is possible. One is that financial forces do not work towards efficiency, and that whatever direction they do work, they are exactly offset by pleasure forces working in the opposite direction. Alternatively, it may be that financial forces work towards efficiency, and pleasure forces are relatively insignificant. While we are willing to admit that the first alternative is possible, we find the second explanation much more convincing.

We conclude that lotto offers an opportunity to test for market efficiency that is perhaps superior to horseracing or football because ex ante probabilities are objective and not subjective, and because lotteries do not involve all the nonmonetary consumption benefits of attending a track and watching the horses race or watching a football game.

Winning the lotto is, however, an extremely low probability event. Even if a given draw is characterized by a positive net expected return, the dollar expenditure and transactions costs of covering even a small proportion of the possible combinations would be prohibitive for most players. This aspect of lotteries makes market efficiency tests all the more interesting, because we are most likely to reject efficiency in situations like lotto where the economic incentive to optimize expected return is so small.

#### IV. DATA

Before proceeding further, a brief discussion of data is in order. We employ data from four lotto games in three states. The Kentucky Lotto is a 6/42 game which started out with weekly drawings but soon moved to twice-weekly drawings. Actual jackpots have been announced at the beginning of each drawing period, and so are only indirectly driven by sales. The sample period runs from November 1989 until January 1991. Massachusetts Megabucks is a 6/36 game with twice-weekly drawings. A predicted jackpot is announced at the beginning of each drawing period, but the actual jackpot depends on rollover and sales during the drawing period. The sample period runs from July 1984 until December 1990.

Massmillions is a 6/46 game with weekly drawings. As with the Megabucks game, its jackpot is determined by rollover from previous draws and actual sales during the period. The sample period is from May 1987 until December 1990. The Ohio Super Lotto is a 6/44 game with twice-weekly drawings. Jackpots are announced at the beginning of each drawing period. The sample period is from August 1989 until September 1990. (6)

#### V. BETTOR BEHAVIOR AND A TEST OF WEAK EFFICIENCY

The take-out rate in lottery games is very high compared to other forms of gambling; therefore it is natural to ask why anyone would play lotto. As mentioned above, lotto obviously provides a thrill. Clotfelter and Cook 1989| offer several explanations of bettor behavior and use responses from surveys of players to back up their hypotheses. Some bettors play for fun, while others play hoping for financial gain. Quiggin 1991| attempts to reconcile the risk-seeking behavior implicit in lottery play with the observation that individuals in general display risk aversion. He modifies the Friedman-Savage expected utility model and is able to rationalize the observed structure of prizes in lottery games.

As discussed above, we do not formally model the nonmonetary returns of a lotto bet. Our purpose is to test whether financial forces act to move the market toward efficiency. It is sufficient for our test that bettors have different reservation prices, these being a function of bettors' attitudes toward risk and the utility (if any) derived from betting. The different reservation prices imply a downward-sloping demand curve for betting. The price of a dollar bet on the lotto is  $\$1 - EV$ , i.e., the

purchase price minus the expected value of a ticket. As the expected value of a lotto bet rises, the price of a bet falls. Lower prices induce more players to participate in the game, and existing players are likely to purchase additional tickets.(7)

Weak-form efficiency exists if there are no betting opportunities that have a positive net expected value (Thaler and Ziemba 1988|). For a large enough rollover and a small enough level of sales, the expected value of a \$1 ticket (from equation (2)) can be more than \$1. The potential for profit from such a situation would likely encourage additional betting, which would reduce the expected value to no more than \$1. Using data from the lotto games described above, we can test for weak-form efficiency.

The expected values of a one-dollar lottery ticket over repeated draws for each of these games are plotted in Figures 1-4. For the Kentucky Lotto in Figure 1, expected value varies from \$0.09 to \$0.58.(8) These figures assume that bettors realize the announced jackpot is the undiscounted sum of twenty annual payments and are able to calculate present value.(9) If that is so then the Kentucky Lotto market is weakly efficient. If bettors use the announced (undiscounted) jackpot the expected value would vary from \$.18 to \$1.17.

Figure 2 contains expected values for the Massmillions game. Discounted present values of the jackpot are used, rather than undiscounted values. Expected values range from \$.28 to \$.95. Expected values never exceed the dollar price of a ticket, hence the Massmillions market is also weakly efficient. Figure 3 contains the Megabucks expected values, also using discounted present value of the jackpot. Only once in six years did the game yield a positive net expected return. Figure 4 contains the Ohio Super Lotto expected values, which range from \$0.16 to \$0.76. Again, weak efficiency is indicated. That expected returns are consistently negative suggests risk-seeking behavior or nonpecuniary returns or both on the part of bettors.

Weak-form efficiency requires relatively simple bettor behavior: they must be able to recognize the potential for abnormal profits. Their collective response then eliminates this potential. We now turn our attention to strong-form efficiency, which involves more sophisticated bettor behavior: the ability to forecast the expected value of a lotto ticket given the information available to them.

#### VI. STRONG EFFICIENCY AND A TEST OF A RATIONAL EXPECTATIONS EQUILIBRIUM

If bettors knew ex ante what the expected value of a ticket would be in each drawing, then an analysis of lotto demand would be like any other commodity whose price is known with certainty. It is not so simple, however, because the expected value of a ticket depends on the behavior of other bettors and is only known with certainty ex post. Bettors must project expected value based on what they think other bettors will do.

Strong-form efficiency exists if all bets have expected values equal to one minus the takeout rate (Thaler and Ziemba 1988|). Both Kentucky and Ohio claim ultimately to return 50 percent of each bet to players in the form of prize money, and Massachusetts pays out 60 percent. From Figures 1-4 it is clear that expected values vary significantly from drawing to drawing, both exceeding and falling short of one minus the takeout rate. Strong form efficiency would seem not to be supported by the data in Figures 1-4.

With lotto games, however, such a simple test is not sufficient. As equation (2) indicates, the expected value of a lotto ticket depends on the structure of the game (i.e. the probability), the dollar amount rolled over from previous drawings, and the number of tickets purchased by bettors. The odds structure of the game does not change from drawing to drawing; however, rollover and sales do. The combined effect of rollover and sales on expected value can be seen if we plot the relationship between expected value and sales for different values of rollover. A different convergence path (i.e. the relationship between expected value and sales) exists for each value of rollover. Figure 5 illustrates the convergence path in the Massmillions game for selected rollover amounts.

Figure 5 indicates that in the Massmillions game, if there is no rollover and sales equal \$4,400,000, a one-dollar ticket has an expected value of \$.19. If sales equal \$8,800,000 then expected value rises to \$.31. If \$4,000,000 has been rolled over from previous drawings and sales equal \$8,800,000, a one-dollar ticket has an expected value of \$.58. In the

limit, as sales approach infinity, expected value converges to one minus the takeout rate.(10)

Now, in practice which is more important in determining expected value, sales or rollover? During the period between May 1, 1987 and December 7, 1990, sales typically ranged from between one and five million dollars, with an average per draw of \$2,055,000. Rollovers ranged from zero to \$22,554,000. Since expected value only approaches one minus the takeout rate in the limit, and since bettors under ordinary circumstances are only willing to buy a limited number of tickets, in any given draw of an actual lotto game expected value will depend largely on the size of the rollover. Over the feasible range of sales there will still likely be a significant difference between expected value and one minus the takeout rate, even if bettors behave in the manner that we have described. A simple comparison of expected value with one minus the takeout rate thus does not constitute a meaningful test of strong-form efficiency.

Since a direct test of strong-form efficiency is not possible, we propose the following test of market efficiency instead. At the beginning of each drawing period, information is available to bettors on the amount of rollover, whether the draw will be held on a weekday or weekend, and previous sales trends. Bettors will decide whether to play the lotto based on their reservation price and their assessment of the expected return. The expected return depends on other bettors' behavior; therefore each bettor must generate his or her own forecast of total sales. The relevant question becomes: do lotto players make systematic errors in their forecasts of sales and hence expected value?

The concept of a rational expectations equilibrium is useful here. If lotto players make systematic forecast errors then the lotto market is not in equilibrium. If expectations are not correct on average, then expectations will not be confirmed by the outcomes of the game and rational players will adjust their expectations. Let us use Figure 5 to illustrate. Suppose that when rollover is zero the typical bettor forecasts sales to be \$8.8 million. If this bettor finds the projected expected value of \$0.31 attractive, he or she will buy lotto tickets. If actual sales when rollover is zero are only \$4.4 million instead of \$8.8 million, the realized return on a lotto ticket will only be \$0.19, which is less than expected. If bettors comprehend and are able to process that information, then they will buy fewer tickets in subsequent drawings with similar rollovers.

A rational expectations equilibrium occurs when expectations generate an outcome that conforms to those expectations. In the context of lotto this means that bettors forecast sales and expected value, and then decide whether to play based on that forecast. Equilibrium means that in aggregate, bettors' decisions to play generate a level of sales that conform to their original expectations of sales and hence, expected value.

Testing for a rational expectations equilibrium in this context involves more than determining whether bettors' forecasts of sales are orthogonal to the information set available at the beginning of each drawing period, which is the standard test of rational expectations. In our model bettors are not concerned about sales per se, instead they care about the expected value of a bet. That requires them to take their sales forecast and combine it with their understanding of probability to generate a forecast of expected value, because it is their projection of expected value that determines whether and to what extent they purchase lotto tickets.(11)

To perform the test we regress the outcome of the lotto drawing, ex post expected value (computed from equation (2)), on the information available to bettors at the beginning of each drawing period. This includes rollover, whether a Wednesday or Saturday draw, the official prediction of the jackpot, and prizes in competing games. If bettors' predictions of expected value are fully captured by these items, then the errors that they make in forecasting expected value will contain no extractable information, i.e. they will be random. The residuals of the regression equation would then be uncorrelated with actual ticket sales. If bettors systematically misforecast expected value, then the residuals will be correlated with actual sales. A player could improve his or her expected return by playing the lotto only when other bettors have underforecast expected value.(12)

Results for the Massmillions game are contained in Columns A and B of Table I. Massmillions drawings are held on Friday nights. Rollover is known at the beginning of each drawing period. The lottery agency announces a



projected jackpot based on its own forecast of sales. In separate regressions investigating lotto demand Massmillions players displayed some sensitivity to the Saturday Megabucks lotto.

The information set available to bettors thus contains Massmillions rollover, Megabucks rollover, the estimated jackpots for both Massmillions and Megabucks, and a time trend. Bettors are assumed to forecast expected value using a quadratic functional form. Hence ex post expected value is regressed on the items in the information set plus squared terms for Massmillions rollover and Megabucks rollover. When the residuals from this regression are regressed on Massmillions sales, there is no significant relationship. This result is consistent with the existence of a rational expectations equilibrium in the Massmillions game.

Megabucks drawings occur on Wednesday and Saturday nights. Rollover is known at the beginning of each drawing period. The lottery agency announces a projected jackpot based on its own forecast of sales. The expected value of a Megabucks ticket is regressed on these variables plus a time trend and rollover squared, and the results are contained in Column C of Table I. (13) Next, the residuals from this regression are regressed on ticket sales. These results are in Column D. The significant negative relationship between sales and the residuals indicates that bettors systematically underpredict expected value when rollover is small, and vice versa. (14)

The Kentucky Lotto differs somewhat from the Massachusetts lottos in that the jackpot is announced at the beginning of each drawing period and does not depend on sales during the period. The jackpot leads rather than lags sales. To estimate expected value bettors need to forecast sales only because the number of other bettors affects the probability that they will have to share the prize. The expected value regression for Kentucky thus includes jackpot and its square, a time trend, a weekly drawing dummy variable for the first twenty-four weeks when drawings were only held on Saturday nights, and a Wednesday drawing dummy for midweek draws after a twice-weekly format was adopted.

These results are contained in Column A of Table II. The significantly negative coefficient for the Wednesday drawing reflects TABULAR DATA FOR TABLE 1 OMITTED| the lower sales associated with middle-of-the-week drawings. The significantly positive coefficient for the time trend is opposite that of the Massachusetts lottos. Since Kentucky uses a pre-announced jackpot, if sales decline over time then the probability of sharing the prize falls and hence the expected value for a given jackpot rises. This result is therefore consistent with the negative time trends in the two Massachusetts lottos.

When the residuals from this regression are regressed on sales there is a significant negative correlation. An analysis of the residuals, however, reveals an interesting occurrence. Shortly after the introduction of the Kentucky Lotto, the jackpot rolled over nine times without a winner and grew to \$5,000,000. The accompanying media blitz led to a more than doubling of ticket sales from the ninth draw to the tenth, when the jackpot was finally won.

TABULAR DATA FOR TABLE 2 OMITTED|

The residual associated with this drawing is an extreme outlier. (15) When that particular observation is not included in the regressions, the correlation between sales and the residuals is not statistically significant. (16) One possible explanation is that, given the novelty of the game, Kentucky lotto players had no basis for forming expectations about other players' behavior. As a group they overreacted to the large jackpot, driving expected value below what they had anticipated. More recent jackpots have grown to as large as \$10 million without eliciting such responses.

The Ohio Super Lotto uses pre-announced jackpots just like the Kentucky Lotto. It is a game that has existed for a number of years, with fairly minor changes in the determination of the jackpot from time to time. Thus there should be no novelty effects in the sample period chosen. The expected value regression includes the announced jackpot and its square, a time trend, and a dummy for Wednesday draws. Results are in Column C of Table II, and they contain no surprises. Regressing the residuals of this regression on sales yields no significant correlation, which is consistent with a rational expectations equilibrium.

## VII. SUMMARY AND CONCLUSIONS

Market efficiency is a critical concept in economics and finance. Only

infrequently do situations arise where relatively clean tests of rational agent behavior or market efficiency can be conducted. State-sponsored lotto games do seem to offer such an opportunity, because the mathematical expectation of a bet depends on, among other things, bettors' aggregate behavior. In deciding whether to play each bettor must predict how others will behave and then act on that prediction.

We find that only on very rare occasions do lotto games offer a positive net expected monetary return, so that lotto markets are generally weak-form efficient. The strong-form efficiency requirement that expected value equal one minus the take-out rate is not meaningful for a game such as lotto where rollover is one of the primary determinants of expected value. Hence our application of the concept of a rational expectations equilibrium to lotto.

Our results offer some support for the existence of a rational expectations equilibrium. Systematic forecast errors by bettors are not evident in the Massmillions game and the Ohio Super Lotto. Individual bettors' decisions to play generate a level of sales that conform to their original expectations of expected monetary value. That conclusion is not supported by the Massachusetts Megabucks lotto and the earliest days of the Kentucky Lotto. It is interesting to note that, unlike the other three games studied, the structure of Megabucks lends itself to relatively few rollovers. In Massmillions, Kentucky Lotto, and Ohio Super Lotto where rollovers occur more frequently and bettors have more opportunities to learn, bettors' expectations appear on average to be correct.

1. For a thorough review, see Thaler and Ziemba 1988|.

2. The number of possible combinations is given by  $44!/6!38!$

3. In Massachusetts, for example, these smaller prizes are not Pari-mutuel and do not vary from drawing to drawing.

4. If players do not choose their numbers randomly, then the binomial distribution does not describe the probability distribution of bets. Cook and Clotfelter 1990|, however, show that under plausible assumptions, expected value is asymptotic to the relative popularity of the particular numerical combination times the proportion of each bet allocated to the jackpot. They also note that the correlation between actual "coverage" of combinations bet and the coverage if all numbers were chosen randomly is close to one.

5. The notation  $n C.k$  denotes  $n!/k!(n-k)!$

6. Sample periods were chosen such that the structure of each lotto game remained the same. Each of the games have recently changed formats, adopting longer odds that lead to more rollovers. The marketing philosophy seems to be that more rollovers create bigger jackpots and disproportionate increases in subsequent sales.

7. See Gulley and Scott 1993| for a discussion and estimation of lotto demand curves.

8. The expected values of a Kentucky Lotto ticket may seem somewhat low, however, Kentucky offered volume discounts on lotto tickets that were not available in the other two states. In addition to single tickets for a dollar, three tickets could be purchased for \$2.00 and eight tickets for \$5.00. The average price of a lotto chance in Kentucky was therefore less than a dollar, and in fact, weighted by the proportion of each option selected by players, was around \$0.66.

9. The present values of the jackpots are computed using the yield-to-maturity on the twenty-year Treasury bond on the day of the drawings.

10. The behavior of expected value in the presence of large rollovers can be understood by inspecting equation (2). Increases in rollover influence the middle term of the equation, causing expected value to increase. However, the first and third terms force expected value to decrease and converge to  $(1-t)$ .

11. This testing procedure is consistent with the more general model of betting behavior described earlier in equation (3) that incorporates both monetary and nonmonetary returns from betting if the two sources of returns are uncorrelated with each other. We are grateful to the editors for pointing this out to us.

12. Exploiting such a profit opportunity is difficult in practice because of the logistical problems encountered in buying a large number of lotto tickets. Such a strategy is not impossible, however, as was demonstrated recently when an Australian syndicate attempted to cover all

the numbers in the Virginia state lotto.

13. The time trend variable is included to pick up any factors that systematically affect sales and expected value over time.

14. Note that as in all tests of rational expectations, ours is a joint test of rational expectations and the adequacy of our specific model. It is possible that our model does not fully capture the behavior of bettors.

15. In the sixteenth week of the newly introduced Kentucky Lotto the jackpot grew after several rollovers to \$3.5 million dollars, before it was finally won. On the thirty-fourth draw the jackpot grew to \$5.0 million dollars. Both were record highs to those respective points in time, and generated sales frenzies. The residuals associated with these two observations in the expected value regression are  $-.017$  and  $-.031$ , respectively, by far the largest residuals in the sample.

16. The  $t$ -statistic falls from 2.22 to 1.57, which is not significant at the 10-percent level.

#### REFERENCES

- Ali, M. "Probability and Utility Estimates for Racetrack Bettors." *Journal of Political Economy*, 85, August 1977, 803-15.
- "Some Evidence of the Efficiency of a Speculative Market." *Econometrica*, 47, March 1979, 387-92.
- Asch, P., and R. Quandt. "Efficiency and Profitability in Exotic Bets." *Economica*, 54, August 1987, 289-98.
- Asch, P., B. Malkiel, and R. Quandt. "Market Efficiency in Racetrack Betting." *Journal of Business*, 57, April 1984, 165-75.
- Chernoff, H. "How to Beat the Massachusetts Numbers Game." *Mathematical Intelligencer*, 3(4), 1981, 166-72.
- Clotfelter, C., and P. Cook. *Selling Hope: State Lotteries in America*. Cambridge: Harvard University Press, 1989.
- Cook, P., and C. Clotfelter. "The Peculiar Scale Economies of Lotto." Working paper, Duke University, 1990.
- Fama, E. "Efficient Capital Markets: A Review of Theory and Empirical Work." *Journal of Finance*, 25, May 1970, 383-417.
- "Efficient Capital Markets: II." *Journal of Finance*, 46, December 1991, 1575-1617.
- Golec, J., and M. Tamarkin. "The Degree of Inefficiency in the Football Betting Market." *Journal of Financial Economics*, 30, December 1991, 311-23.
- Gulley, D., and F. Scott. "The Demand for Wagering on State-Operated Lotto Games." *National Tax Journal*, 46, March 1993, 13-22.
- LeRoy, S. "Efficient Capital Markets and Martingales." *Journal of Economic Literature*, 27, December 1989, 1583-1621.
- Quiggin, J. "On the Optimal Design of Lotteries." *Economica*, 58, February 1991, 1-16.
- Pope, P., and D. Peel. "Information, Prices and Efficiency in a Fixed-Odds Betting Market." *Economica*, 56, August 1989, 323-41.
- Sauer, R., V. Brajer, S. Ferris, and W. Marr. "Hold Your Bets: Another Look at the Efficiency of the Gambling Market for National Football League Games: Comment." *Journal of Political Economy*, 96, February 1988, 206-13.
- Saunders, S., and M. Moody. "Great Expectations: or Playing the Odds in the State Lotteries." *Northwest Science*, 61(4), 1987, 239-48.
- Snyder, W. "Horse Racing: Testing the Efficient Markets Model." *Journal of Finance*, 33, September 1978, 1109-18.
- Thaler, R., and W. Ziemba. "Pari-mutuel Betting Markets: Racetracks and Lotteries." *Journal of Economic Perspectives*, 2, Spring 1988, 161-74.
- Zuber, R., J. Gandar, and B. Bowers. "Beating the Spread: Testing the Efficiency of the Gambling Market for National Football Games." *Journal of Political Economy*, 93, August 1985, 800-06.
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**Top events, top prices**

Michael Evans

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Sports fans wanting guaranteed seats to Olympic events will be slugged premiums of more than 100% for the highest demand events. The Sydney Organising Committee for the Olympic Games (SOCOG) released details on 10 May 1999 of a "sports pass" program aimed at devoted fans who could be guaranteed seats at every session of an event for a premium of about 30%. But guaranteeing seats with season tickets to events at which Australians should perform well could cost as much as 102% more than buying all tickets individually. Season tickets to sports expected to feature Australians prominently will be slugged upwards of 30% including equestrian jumping (102%), beach volleyball (82%), track cycling, rowing and triathlon (50%), and hockey (33%). SOCOG's sports general manager, Bob Elphinstone, defended the premium, saying the sports pass program was "the only guarantee of a ticket"

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# PATENT COOPERATION TREATY

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## DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT

(PCT Article 17(2)(a), Rules 13ter.1(c) and Rule 39)


Applicant's or agent's file reference <b>032922-013</b>	IMPORTANT DECLARATION	Date of mailing(day/month/year) <b>29/10/2001</b>
International application No. <b>PCT/US 01/ 09146</b>	International filing date(day/month/year) <b>22/03/2001</b>	(Earliest) Priority date(day/month/year) <b>22/03/2000</b>
International Patent Classification (IPC) or both national classification and IPC <b>GO6F17/60</b>		
Applicant <b>GLOBAL ETICKET EXCHANGE LTD. et al.</b>		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. ☒ The subject matter of the international application relates to:
  - a. ☐ scientific theories.
  - b. ☐ mathematical theories
  - c. ☐ plant varieties.
  - d. ☐ animal varieties.
  - e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
  - f. ☒ schemes, rules or methods of doing business.
  - g. ☐ schemes, rules or methods of performing purely mental acts.
  - h. ☐ schemes, rules or methods of playing games.
  - i. ☐ methods for treatment of the human body by surgery or therapy.
  - j. ☐ methods for treatment of the animal body by surgery or therapy.
  - k. ☐ diagnostic methods practised on the human or animal body.
  - l. ☐ mere presentations of information.
  - m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.
  
2. ☐ The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
 

☐ the description
☐ the claims
☐ the drawings
  
3. ☐ The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
 

☐ the written form has not been furnished or does not comply with the standard.
   
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4. Further comments:

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <b>María Rodríguez Nóvoa</b>
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## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

The claims relate to subject matter for which no search is required according to Rule 39 PCT. Given that the claims are formulated in terms of such subject matter or merely specify commonplace features relating to its technological implementation, the search examiner could not establish any technical problem which might potentially have required an inventive step to overcome. Hence it was not possible to carry out a meaningful search into the state of the art (Art. 17(2)(a)(i) and (ii) PCT; see Guidelines Part B Chapter VIII, 1-6).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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venue owner, or team, since the patron only paid the perceived value of the entertainment. In addition, increased sales from non-ticket revenue sources, such as parking, concessions, merchandise sales, and the like, will likely result from the increased attendance. These non-ticket sources of revenue are generally quite  
5 profitable, since the incremental cost necessary to accommodate increased attendance is relatively minimal.

In the conventional arrangement, one physical ticket, e.g., a paper ticket, is generated for each available seat at a venue, and each attendee is required to present a ticket to gain entrance to the venue. This requirement for physical  
10 possession of tickets places a restriction on the patron's ability to freely exchange tickets, particularly as the time of the event draws near. Typically, if a purchaser of a ticket is unable to attend the event, he or she may attempt to sell it or give it to an acquaintance, broker or scalper. In some cases, the purchaser may attempt to dispose of the ticket through an online auction site. However, this procedure  
15 has time constraints, since the seller must be able to physically deliver the ticket to the purchaser in time for it to be received prior to the event. Often, the purchaser is left with the option of simply forfeiting the cost of the ticket, or reselling it to a broker, usually at a substantial discount to its fair market value.

### **Summary of the Invention**

20 It is an objective of the present invention to provide a system for the sale, exchange and use of tickets which enables a venue owner to maximize the potential revenue that can be achieved with each event. Furthermore, it is desirable to provide a system which can forego with the need for physical bearer-type tickets, and thereby facilitate the patron's ability to more easily exchange tickets.

25 In accordance with the present invention, these objectives are achieved by means of an electronic ticket exchange system by which venue owners can sell tickets to patrons at a fair market value for each event, and the patrons can more easily trade and transfer the tickets among one another after they have been



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purchased. Tickets for an event are initially offered to the public, typically by the venue owner, using a market-making system. In this system, patrons submit bids over a limited time period, for seats of different quality. Once the limited bidding period expires, an initial price is established for each quality of seat, on the basis  
5 of the submitted bids and an econometric model that takes into account certain constraints and other factors. The tickets are then sold to the public at that price. Thus, the owner is able to establish a fair-market value for each quality of seat at each event, rather than being locked into a pricing structure that may not optimize profits for the owner.

10 Another feature of the invention is a trading system which provides for a secondary market in which patrons who have purchased tickets for an event can readily sell them to other patrons, without requiring the services of a broker or the like. The ability to freely exchange tickets is facilitated by a further feature of the invention which dispenses with the need for physical tickets. In accordance with  
15 this aspect of the invention, all of the rights associated with a ticket, such as entry into the venue, parking privileges, designated seating, can be are stored in a electronic form. Hence, all trading can be performed electronically, using various methods, without the need to exchange any physical material between the buyer and the seller.

20 When an electronic ticket is employed, another feature of the invention provides an electronic venue entry control system. Upon presentation of one of various predetermined forms of unique identification, the control system verifies that a person owns an electronic ticket property right, and then authorizes the privileges associated with the ticket, such as access to parking facilities, entry to  
25 the venue, purchase of concessions and/or merchandise, and the like. As a further feature, specific seats need not be assigned at the time the tickets are purchased. Rather, a seating system can be employed to determine an optimal seating configuration based upon patron-specific preferences, for instance after completion

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of an initial sale of tickets. The specific assigned seats can then be indicated to the ticket holder at the time of entry.

In a preferred implementation of the invention, patrons who regularly purchase tickets become members of an organization associated with the ticket exchange system. All transactions carried out within the system can then be easily accomplished through a single membership number, which is permanent and unique to the member. Each such member can be provided with a contactless card, or suitable mechanism which interfaces with the entry system to provide access to the venue, and parking if appropriate. Examples of such include key fobs, PDAs, cellular telephones, and other such devices which can store and transmit the unique member identification. The identification device can also be used to make purchases of merchandise, concessions, parking and the like at the venue. Members can also be provided with electronic notification of the availability of tickets and current market prices for them.

Among the advantages offered by the invention, venue owners can obtain a true "market value" for tickets, rather than be forced to guess at a reasonable face value. Furthermore, the ability to trade tickets on a secondary market results in selling attendance, rather than seats, providing a higher yield of the venue, along with increased convenience and liquidity for the patrons. The electronic notification services further enhances the likelihood that available tickets will be sold. The venue owner is able to obtain and track information regarding patron bidding, purchases and trading. The identification device enables additional information to be obtained that contribute to more efficient marketing, sales and inventory management, such as concession and merchandise sales.

These and other features and advantages of the invention are described in detail hereinafter, with reference to the accompanying drawings.

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**Brief Description of the Drawings**

Figure 1 is a block diagram illustrating the relationship of parties involved in conventional entertainment events;

Figure 2 is a general block diagram of the major components of an electronic ticket exchange system in accordance with the present invention;

Figure 3 is a block diagram of the payment system;

Figure 4 is a block diagram of the entry system; and

Figures 5-8 are flowcharts of operations which occur with the electronic ticket exchange system.

**Detailed Description**

The present invention comprises an electronic ticket exchange system that can be employed in connection with any type of entertainment event in which proof of entitlement to entry, such as a ticket or the like, must be given to provide a patron with access to the event. To facilitate an understanding of the principles which underlie the invention, it will be described hereinafter with occasional reference to its application in the context of particular examples of entertainment, such as sporting events. It will be appreciated, however, that the practical applications of the invention are not limited to these specific examples. Rather, its general applicability to all types of entertainment events and venues will be apparent from an understanding of the following description. For instance, various features of the invention can be employed in the context of musical concerts and other live performances, movie theaters, amusement parks, and other situations in which access is to be limited to those who have purchased a ticket or can otherwise demonstrate entitlement to attend.

A number of different entities may be involved in entertainment events. These entities, and their conventional relationship to one another, are depicted in the block diagram of Figure 1. Typically, an entertainment event is defined as a presentation by an artist 1 at a venue 2 at a designated date and time. Depending

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upon the nature of the event, the artist could be an athletic team or individual athletes, a band, actors and/or actresses, or other types of performers. For some venues, the entertainment may not include a performance by a "live" artist. For instance, it may be presentation of a movie, participation in an amusement ride, or  
5 the like. The venue could be an athletic stadium, a hall or concert center, a golf course, or other suitable form of property where access to an event is controlled.

Typically, a promoter 3 creates interest in the entertainment to entice attendance by spectators. The promoter may be responsible for scheduling the venue, negotiating contracts, and handling the various administrative tasks  
10 associated with the entertainment event. Depending upon the type of entertainment, the artist, promoter and venue owner could all be closely related, or could be independent of one another. In the case of athletic teams, for example, the venue owner and the promoter may be the same entity.

The patrons 4 are those people who purchase tickets in order to observe,  
15 enjoy and participate in the entertainment being provided. The patrons can be individuals, corporations, traders and the like. They could also be any one or more of the artist, venue owner and promoter themselves, who may distribute the tickets as gifts or promotional offers.

Ticket agents 5 are third parties whom the venue owners engage to sell and  
20 distribute tickets to entertainment events, in lieu of, or in addition to, directly selling the tickets themselves. Brokers and scalpers 6 are third-party traders who purchase tickets, primarily for popular events, and resell them to patrons at prices that are typically greater than, but sometimes less than, the face value of the tickets. The brokers can be small-scale businesses, such as ticket broker agencies,  
25 or individuals. Scalpers are typically individuals. The brokers and scalpers may obtain the tickets directly from the venue, or from ticket agents, or from patrons.

In accordance with the present invention, an electronic ticket exchange system replaces the functions of the ticket agents 5 and brokers 6, and offers added value to the venue owner and the patron. The electronic ticket exchange system is

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typically sponsored by the venue owners. The basic components of the electronic ticket exchange system are illustrated in the block diagram of Figure 2. The electronic ticket exchange system includes a patron interface 10 by which patrons can purchase tickets for desired events, as well as trade purchased tickets with other patrons. A patron's access to the system can be obtained by a variety of different means. For example, the patron can interact with the system by means of the Internet, using any suitable form of communication for connection to the Internet, such as a standard web browser, PDA, Internet appliance, etc. For this purpose, the interface is supported by web servers 12 for transmitting the appropriate HTML pages, or the like, to permit the patron to view information regarding available events and enter requests for tickets. To accommodate patrons who access the internet via cellular phones or other wireless devices, the web servers can include one or more servers 13 which support wireless communication technologies, such as the wireless access protocol (WAP), Bluetooth, IEEE 802.11B, iMode, HiperLAN (European) RF, etc. Alternatively, the patron can perform these operations by means of a telephone system 14 or an interactive television system 15 which also forms part of the patron interface 10. In a telephone system access, the patron might speak to a live operator, or use an automated menu system to obtain information and enter requests. As a further component, the patron interface might include several walk-up kiosks 16 at distributed locations, for example in shopping malls, retail outlets, convenience stores, and the like. Such kiosks can also be located at the site of the venue itself, for direct access by the patrons or operation by ticket sales personnel at the venue's box office. Alternatively, the venue box office can sell and trade tickets via a web browser or similar such interface.

The patron interface 10 enables the patron to perform a number of fundamental types of operations, such as (1) to obtain information about events at one or more venues affiliated with the system, (2) bid upon and/or purchase tickets to desired events, (3) exchange tickets among multiple patrons, and (4) schedule

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notification alerts. In addition, the patrons may be able to order merchandise and other goods, link to related sites, etc. Information regarding the events that are scheduled for the affiliated venues is stored in a venue/event database 18. When a patron first accesses the system via the interface 10, a list or menu of the affiliated venues or events can be provided, to permit the patron to make a selection.

Preferably, the views presented by the interface are customizable, so that the patron can view all venues and then select a specific event, or view all events and then select an appropriate venue. Seating maps 20 for the affiliated venues are stored in conjunction with the database 18. Once the user has selected a particular venue and event, the appropriate seating map can be displayed to permit the patron to assess the relevant information for various categories of seating quality, when either the Internet access or the walk-up kiosks are employed. In the case of telephone access, the seating map can be displayed to the telephone operator.

In a preferred implementation of the invention, the patrons who access the system are members of an organization affiliated with the system. A profile of information pertaining to each member is stored in a database 22. Each profile might include, for example, a credit card, bank account, or other source of funds that are to be used when tickets are purchased, seating preferences, group memberships, and the like. When the patron purchases tickets for a particular event, information regarding the method of payment is retrieved from the database 22 and forwarded to a payment system 24. At the same time, information is recorded which indicates that the user has purchased one or more tickets for the event. This information could be stored in the patron profile database 22, or the venue/event database 18, or both.

The payment system 24 processes all of the monetary transactions which occur within the ticket exchange system. When a need to confirm a request to purchase tickets occurs, the price of the tickets is forwarded to the payment system 24, where it is debited against the form of payment which has been established by the patron, e.g. credit card, debit card, cash balance on deposit, designated

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checking account, etc. If desirable, the payment system can ensure that the proper funds are available and confirm that fact to a central server 26 before the transaction is completed.

5 The payment system 24 can also be used to facilitate other types of purchases by the patron. As described previously, the patrons who access the ticket exchange system can be members of an organization. Their membership can be indicated by means of a membership card or a token which serves as an identification device. The membership identification device can take any of a variety of forms, and preferably is one which is capable of electronically, optically  
10 or magnetically storing a membership identifier, e.g. a number, alphanumeric string, or code, and transferring that identifier to a transaction device, through either physical contact or in a contactless manner. Examples of suitable identification devices include smart cards, magnetic stripe memory cards, RFID devices such as key fobs, tags, watches, etc., barcoded tags and the like, personal  
15 digital assistants (PDAs), wireless telephones, and biometric features. Whenever the member makes a purchase at the venue, the identification device can be used to debit the member's account via the payment system, in lieu of cash. Thus, the identification device can be used to pay for parking at the venue, as well as purchase concessions, services and merchandise while attending an event.

20 A more detailed illustration of the implementation of the payment system is illustrated in the block diagram of Figure 3. A core payment server 28 communicates with the central server 26 and receives information regarding ticket purchases by patrons. The amounts of purchases are forwarded to a bank card processing agency 30, which verifies the patron's credit or debit card and provides  
25 an authorization code for the transaction. In the case of a cash balance on deposit, or pre-approved credit limits, the verification can be performed internally within the server 28.

Local payment servers 32 can be located at each of the individual venues. The local servers communicate with identification device readers 34 at the

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concession stands and other points of sale. In the case of parking payments, the parking facilities can be equipped with portable readers 36 which communicate with the local servers via radio wave communication. The local servers 32 receive information as purchases are made, and forward this information to the core  
5 payment server 28. The communication of this data to the primary server can occur in real time, or in a batch mode on a regular basis. In the case of real-time mode operation, it may be preferable for the local servers to communicate directly with the credit card agency 30, to authorize transactions as they are being made. The core payment server 28 consolidates all of the transaction information to  
10 provide reports to the patrons regarding the activity on their accounts. Preferably, the patrons can access these reports via the web access server 12.

An associated advantage that arises from the use of the membership identification devices to make purchases is the fact that it permits the detailed item transaction data to be collected for later mining and analysis. For instance, the  
15 venue owners can determine the types of merchandise, food and drinks that are the most popular at different types of events. This data can even be categorized according to quality of seating section, so that the various concession stands are stocked appropriately. It also facilitates the ability to target various groups of patrons, and direct actionable marketing to them on a real-time basis.

20 In addition to purchasing behavior, other information can be collected and analyzed to improve the services offered through the ticket exchange system. Examples of such information include bids for initial purchase of tickets, bids for subsequent trades involving tickets, utilization of parking facilities, etc. Similarly, the patrons may use their membership identification to effect purchases away from  
25 the site of the venue itself, such as buying team apparel from a team-sponsored Internet site. In essence, any transaction that takes place in connection with the membership number via any medium can be collected and tracked for subsequent data mining.



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One of the principle advantages of the electronic ticket exchange system of the present invention is the fact that physical tickets are not required to gain entry into the entertainment venue. Rather, the patron's purchase of a ticket is electronically stored in the system, e.g. in the databases 18 and/or 22, and identifies the patron's right to enter the venue for a specific event. To this end, another component of the ticket exchange system is an entry system 38 located at each affiliated venue. Upon arrival at the venue, the patrons need only present suitable forms of identification which confirm that they are the persons having electronic tickets registered in the system. In the preferred implementation of the invention in which the patrons possess membership identification devices, those devices can be used to gain entry to the venue, as well as make purchases as described previously. Hence, a single membership identification device can be re-used at all of the venues which are affiliated with the electronic ticket exchange system.

A more detailed illustration of the entry system is illustrated in Figure 4. Each venue has one or more entry servers 40 affiliated with it. Preferably, the entry server is located at or very near the site of the venue, and communicates with the central server 26 to receive data regarding those patrons whose records indicate that they possess an electronic ticket for admission to a given event at that venue, as well as guaranteed parking and other rights associated with an electronic ticket.

An access-control device 42 is connected to the server 40 to provide admission to the venue upon presentation of the proper identification. Depending upon the number of entry locations at the venue, a multiplicity of such entry devices may be employed. Each device is equipped with a reader 44 to receive the appropriate information from the attendee's identification device, and provide the patron's identity to the server 40 to confirm ownership of the proper electronic ticket for the event. Upon receipt of confirmation from the server, approval is given to permit entry. Depending upon the nature of the access-control device, the approval can take different forms. For example, in one implementation the access-

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control device can be turnstile or other mechanically-controlled gate. In this case, the approval can be release of the gate to permit one person to pass. In another instance, the access control might be manually enforced, such as a rope that is controlled by a security person. In this case, the approval could simply be a message on a screen, or a colored light to indicate whether a person should be permitted to pass, or stopped.

The recognition of a patron's right to gain access to an event can take different forms. In one embodiment of the invention, a token which indicates the right to a particular seat, or type of seat, can be stored in a database 18 or 22 at a remote server 26, in association with the patron's membership identifier number. The token and associated membership identifier can be downloaded to the event server 40 prior to the event. In this case, when the patron presents his or her identification device, the access-control device 42 checks the identifier against the database, to determine whether the token is present. If so, access is granted. For some types of identification devices, it may also be feasible to store the token directly in the device. More particularly, if the device has a writeable memory, such as a smart card, PDA, cell phone, etc., the token can be directly loaded into the device at the time the patron purchases a ticket, or some time thereafter. In this case, when the identification device is presented at the access-control device 42, the token is directly read and access is granted, without the need to communicate with a database on a remote server. If desired, the access-control device can send a signal to the communication device to delete the token once access has been granted, to prevent its reuse by another.

Alternative forms of identification might be employed for attendees who do not possess membership identification devices. For example, a barcoded paper or card might be issued when the ticket is purchased, or the attendee might provide a driver's license number or social security number. A suitable barcode reader and/or keypad can be included with the access-control device for each of the possible types of input.

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Since the admission to the venue does not require possession of a physical ticket, if open seating is not to be employed it may be desirable to provide each patron with an identification of the particular seat that has been assigned to that person. For this purpose, a printer 46 can be located in the device to print a  
5 simple paper ticket which indicates the date, seat number, event name, and the like, for use by the patron to present to an usher and/or locate the seat.

For most venues, such as athletic stadiums, concert halls, and the like, the entry system is likely to be permanently installed at the venue. Certain types of events, however, take place at different locations where it may not be practical to  
10 install such a system on a permanent basis. Examples of such include golf tournaments, automobile races, wrestling events, tennis matches, outdoor concerts, and the like. To facilitate the use of the electronic ticket system for these types of events, a portable entry system can be employed, to be set up at the venue for the duration of the event, and then removed thereafter.

15 One of the limitations associated with conventional ticketing systems is the fact that seats are usually assigned at the time the tickets are purchased. This approach can result in less than optimal seating configurations, particularly for popular events. For example, a large group of people may not be able to purchase contiguous seats due to previous assignments of seats which are dispersed  
20 throughout a desired seating area. However, in the system of the present invention, it is not necessary to assign specific seats at the time the tickets are purchased. Rather, it is only necessary to record the fact that each of the patrons has purchased a particular level or quality of seating at the time of the purchase. The level or quality of seat can be based upon a number of factors, such as price  
25 and location. When a ticket is purchased, the patron can be informed of the gate or portal to be used when entering the venue, without reference to a particular seat.

At a suitable time thereafter, a seating system 48 determines an optimal seating configuration for all of the tickets which have been purchased up to that

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point. This determination takes place on a continual basis, and is updated to reflect the trading of tickets and new patron preferences. The seating system can have the capability to optimize and assign seating for all types of tickets, including season tickets, luxury boxes, permanent seat licenses, subscription tickets and  
5 general admission tickets. For general admission types of seating, the specific seat assignments might not be determined until just before the doors or gates are opened for admission, to provide the greatest optimization. However, for other, more specialized types of seating, such as season tickets, luxury boxes, permanent seat licenses, subscription tickets, etc., it may be preferable to assign the seats at  
10 an earlier time in the process, e.g., when a bid is accepted and confirmed for the initial purchase of tickets.

The optimal configuration is based upon a set of parameters which are entered by the patron, such as quality of seats, number of contiguous seats, and preferences such as adjacent an aisle, close to an exit, etc. These parameters can  
15 be entered at the time the tickets are purchased, or some of them can be previously recorded as part of the patron's profile in the database 22. For each different quality of seats, the seating system assigns individual seats to the purchased electronic tickets. These seating assignments are sent to the entry system server 40 for the venue, preferably just prior to the time that the event is opened for  
20 admission. However, the seating system can continue to optimize seating arrangements after admission has commenced, even after the event has started, to accommodate late ticket, purchases and transfers.

When the patron enters the venue, the seating assignments are queried and printed, or otherwise provided to the patron. The dynamic assignment of seats in  
25 this manner provides greater flexibility, resulting in greater convenience to the patrons. For instance, even if a number of patrons purchase their tickets at separate times, they will still have the opportunity to all sit together if they have indicated that as a preference. This greater flexibility is likely to result in increased ticket sales.

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In the embodiments of the invention where a ticket is held in the system in electronic form, rather than requiring physical possession of tickets, the ability to more freely exchange tickets among patrons is enhanced. More generally, the system of the present invention facilitates the establishment of an open market for tickets, which enables their prices to be matched to the intrinsic value of the underlying event, in addition to fostering their transferability. In essence, the tickets can be bought and sold in a manner similar to the initial sale and subsequent trading of securities. The initial sale of the tickets, or initial offering, is conducted by the venue owner. Subsequent trading of the tickets takes place among the patrons, in a secondary market that is endorsed by the venue owners.

A hybrid of a Dutch auction approach (the lowest bid that still qualifies) and a regular auction approach can be used to set the initial price of tickets. Such a hybrid bidding approach is likely to result in optimal revenue generation for the venue owner, and be more akin to initial and direct public offerings that occur in stock markets, for each quality of seat section. For all types of tickets, including general admission, season tickets, luxury boxes, permanent seat licenses, and the like, the patrons can submit bids for the ticket related to that event, prior to the event's occurrence. This increased access to tickets is likely to result in additional demand and an increased market for tickets and to translate into higher market values for the tickets. A pricing window can be established for patrons to submit their bids. For example, the pricing window can be two weeks in length, but can vary anywhere from one day to a month or more, in dependence upon factors such as the type of event, venue owner preferences, and patron demand. This pricing window should preferably be coordinated with the venue owner's own advertising and promotional efforts for the event. By having a pricing window for bid submissions, patron inconveniences such as long lines, difficulty in accessing websites, and busy telephone numbers can be eliminated. The lead time and length of the window for submitting these bids can be co-determined by the ticket exchange system and the particular venue owner. Establishing a standard lead

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time for bid submissions is likely to provide behavioral benefits for the patrons. For example, if every venue owner requires bids to be submitted between four and six weeks prior to an event for general admission and/or eight to ten weeks prior to a season for season tickets, patrons will learn this process and become comfortable with this approach of selling tickets over time.

In addition to marketing efforts by the venue, promoter, etc., the system provides each patron with adequate information for each event so that the patron can make a well-informed bid for each event's ticket. This information could include such items as:

- 10       - comparable ticket selling prices for identical/similar recent events or events that are deemed to be similar, analogous to the approach used in the real estate market for providing guidance to homebuyers;
- 15       - market-determined prices, if available, for a specific venue along with the attendance at the venue for a particular event measured as a nominal amount and percent of capacity;
- ticket face values, if applicable, for a specific venue along with the attendance at the venue for a particular event measured as a nominal amount and as a percent of capacity;
- 20       - the most recent ticket market values and prior year ticket market values for the venue in question;
- a gate of entry for a given quality of seat upon which the patron is bidding;
- a minimum level bid price for each quality of seating section for each venue and each event;
- 25       - a list of marquee performers for each event at the particular venue. If the event is sports related, this could include an injury report and any important trade information;
- performance statistics of performers, if relevant;
- patron postings of performance reviews for an entertainment event;
- where relevant, current year and prior year won/lost records;

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- timely press or newswire related articles about the event, marquee performers, and/or venue;

- audio and video links about an event to enhance the experience for the patron by providing a sense of participation in anticipation of the event prior to the event, and thereby create increased interest surrounding the event.

Any other type of information which would assist the patrons in making informed bids can also be included. This information can be provided by means of any of a variety of suitable communication media. For instance, it can be presented through any of the access points provided by the patron interface 10, such as Internet web pages, wireless communication, interactive television, kiosks and venue sites, call centers, etc. In addition, it can include other forms of information dissemination as well, such as instant messages and electronic mail, voice-activated response centers, and the like.

In a preferred implementation, patrons submit "blind bids" during the pricing window so detailed pricing information about current bids for the event being sold will not be available to other patrons. By using a blind bid system, price gaming amongst patrons is much less likely to occur while the venue owner will be much more likely to receive the patron's best offer price, resulting in an optimal initial selling price for the tickets rather than the lowest common denominator that occurs in interactive auction approaches. Also, patrons have significantly less incentive to review their bids immediately prior to the close of the pricing window, resulting in a reduction in excessive peak period demands on the trading system since there is no minimum level bid to beat. However, some level of concise and simple real-time guidance might be provided to patrons. The optimal type and level of dynamic bidding information, such as pricing (e.g., range, etc.), volume, etc. to provide to patrons for the bidding process can be empirically determined.

In one embodiment, patrons can only place one active bid per quality of seating section, however they can place a bid in as many quality of seating sections as they desire. At the time a patron enters multiple bids, the patron will be

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required to indicate whether all of the bids are to be live (e.g., all bids that are above clearing price will be purchased) or if the patron only wants to purchase a ticket at the highest quality of seat for which a qualifying bid was submitted.

Also, patrons can update, change, and/or cancel their bids at any time during the  
5 initial ticket pricing window period, until the time the pricing window closes.

Once the pricing window closes, one singular selling price is determined for each quality of seat section, based upon the winning bids that were equal to or greater than the singular price all patrons in that section were willing to pay. By having one singular selling price, patrons are less likely to be upset about a  
10 purchase after it is made because everyone in their quality of seating section will have paid the same price. Those patrons who bid higher can be given higher priority with respect to their seating preferences. As long as a patron's bid is equal to or greater than the winning auction price, he or she will be guaranteed a ticket, absent any ties. If more patrons submit bids equal to the winning auction  
15 price than the number of available seats, resulting in the need to establish a tie breaker mechanism, a set of rules can be used to select the winning bidders. These rules could include: (1) timing of when the ticket was bid upon, with an earlier bid being better than later, (2) membership status of the patrons, (3) number of events purchased/traded through the system, (4) higher maximum bid  
20 levels during the initial sales period result in a higher preference, etc.

A market system 50 functions to establish each event's market value and the initial price for each quality of seating section, based upon the bids that were submitted. For example, the pricing could be determined in accordance with an econometric model that has as its primary objective to optimize the economic  
25 benefit for the venue owner (and any other parties that participate in ticket revenues, concession, and merchandise sales), while considering all of the most important and relevant tradeoffs and constraints impacting the economics for the event such as ticket revenues, concession and merchandise sales, television revenues, radio revenues, marginal costs for each additional ticket sold, etc. Once



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the initial ticket prices are established, and any necessary tiebreaker criteria considered, patrons who have won a bid are notified of the success of their bids and the auction winning pricing for their bids. This notification is preferably sent within a few days of the bidding window closing, and the member's account is  
5 automatically billed through the payment system 24. Also, secondary trading is allowed immediately upon final determination and communication of the initial ticket selling price. The method for notification for each patron's winning bid can be as follows:

- 10 - if a final winning bid was submitted on the Internet, an e-mail or instant message (IM) is sent to the e-mail address stored in the database 22 for the member who won the bid;
- for final winning bids submitted in distribution channels other than the Internet: if available, an e-mail or IM is sent to the e-mail address on record for the member; if an e-mail address is not available, a notification is sent via  
15 automated voice response systems, first-class mail, pagers or the like;
- for situations where immediate notification is necessary, such as for playoff games, etc., a notice is first sent via e-mail or IM, however when an e-mail address is not available the patron is notified via automated voice response systems, paging systems, or the like, if sending the notice out by first-class mail  
20 would not be timely;
- the patron's membership profile in the database 22 is automatically updated so that the patron can access the profile to determine the success or failure of a bid via the Internet, telephone, or the venue itself, if so preferred.

In addition to notifying bidders of the success or failure of their bids, the  
25 notification capabilities of the system can be used to provide other related types of information. For example, once an initial ticket price has been established, if additional tickets are still available for that category of ticket, a notification can be sent to all members to inform them of the price at which the tickets can be purchased. As a further feature, members can set up their profiles so that they

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only receive such notification if the established price is below a certain level or within a certain range that they select. Other types of information that can be provided to members include the opening and closing of bidding windows, and announcements that a preferred type of entertainment and/or performer will be  
5 appearing at a designated venue. Members can edit their profiles to indicate their preferences as to the types of such notifications to receive, and the medium by which they are delivered, e.g. e-mail, MI, pages, etc.

Since one of the system's primary objectives is to increase attendance, and not merely sell seats, a trading system 52 allows patrons to sell, trade or otherwise  
10 transfer their tickets in a fair, efficient and fully informed manner prior to an event, in case the patron cannot attend the event and desires to sell the ticket. It is preferable for the venue owner to sell a seat and have a person in attendance at the event because the individual who attends an event is likely to enjoy the entertainment experience and thereby build loyalty, as well as purchase parking,  
15 concessions, and possibly even merchandise, versus a situation where a patron does not attend and purchases nothing other than the seat. Furthermore, getting new patrons to attend an event when a season ticket owner cannot attend is more likely to result in additional merchandise sales because the new patron will not have likely purchased the merchandise in the past.

20 The trading system provides and facilitates a liquid and efficient market for secondary trading of tickets for events and venues. The liquidity for tickets will likely result in an additional incentive for patrons to purchase tickets to events and will likely translate into higher market value for these tickets. The secondary trading of tickets is analogous to the secondary trading that occurs for stocks, with  
25 unique identification symbols for each event (e.g., akin to a company's stock ticker); up-to-the-second posting of bid/ask spreads for each ticket for each event being sold; and a market trading system that matches various types of orders placed by sellers and buyers.

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The trading system 52 functions purely as a broker providing a market that allows seamless trading of tickets by matching willing and informed buyers and sellers. A separate market is preferably established for each level and type of seating that is available for an event, in the same manner as the initial bidding process. When trades are made between patrons, the trading system communicates with the payment system 24, to appropriately debit and credit the accounts of the buying and selling patrons. Alternatively, a third-party payment system which facilitates consumer-to-consumer payments, such as PayPal.com or BillPoint.com, can be associated with the trading system to carry out the financial portion of the transaction associated with the trading of tickets.

The trading system 52 may also communicate with the notification component of the system, to send notices to potential and successful buyers and sellers regarding prices and trades. The trading system can quote information such as the current bid/ask spread, the last matched trade price, etc. As a further feature, patrons can register to receive an alert message, e.g., an e-mail, page or instant message (IM), whenever the price of a designated type of seat increases or decreases to a selected level on the secondary market. For each secondary market trade that is executed, there is a bid and ask (offer) price for the trade that must eventually converge to result in a match. Analogous to stocks, the level of the bid/ask spread is dependent upon the liquidity of the tickets related to the event in question, with more liquid trading resulting in smaller spreads.

The trade prices under an exchange approach where the trading system is acting as a broker result in a situation where the buyer and seller are paying the same market price, although not necessarily the same total price when fees are accounted for. The market price may be identical, yet the fees could vary for the buyer vs. the seller or be the same. For instance, a commission could be charged to both the buyer and seller for a trade that takes place at a market price, or the seller only, or the buyer only.

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The trading system can allow for 'fill or kill' trades for certain types of tickets where all the tickets are sold to a purchaser or group of purchasers, who has an identical number of tickets to be purchased as a ticket seller, or group of sellers, is trying to sell. In other words, the sale order is not executed unless the  
5 entire block of tickets can be sold (e.g., if only a portion of the tickets can be sold, the trade does not take place). This could likely apply to season ticket holders where they are selling specific seats that can not be dynamically moved around.

Patrons can place orders using terminology that is analogous to the terminology used for the stock markets. By using similar terminology to stock  
10 markets, the level of necessary patron training is significantly reduced and the likelihood of greater patron acceptance increased. Patrons have the choice of placing all kinds of orders including: market orders (sell or buy at current market price); good-till-canceled orders (sell or buy the ticket at a specified price until the trade is executed or the patron cancels the order); day limit order (sell or buy an  
15 ticket at a specified price for the duration of a specific day); stop-loss order (if the ticket's value falls to a specified level the ticket will be sold); and the like.

As another feature which is analogous to stock trading, data such as the initial and secondary market trading prices, price increases/decreases, volume and ticker symbols for the tickets traded via the electronic ticketing system can be  
20 captured and provided to news services and other similar types of services that report this type of data from stock markets. The recipients of this data could include broadcast, cable and satellite television stations, newspapers, Internet portals, quote services, IM services, etc. The data can be provided as a delayed feed, similar to stock quotes, or in real time. The delivery of the data can be in  
25 the form of moving ticker-tape quotes on a display screen, transparent overlays on other content, borders or banners in visual presentations, text-to-voice audio messages, etc.

The foregoing features of the invention provide a great deal of flexibility in the benefits associated with the sale and exchange of tickets. For instance, the

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benefits can be categorized across two dimensions, namely different types of electronic tickets and different types of membership. More particularly, a ticket represents a set of rights the patron obtains as a result of owning a particular type of ticket. These rights can be bundled in three different categories, standard  
5 tickets, restricted tickets, and temporary tickets.

Standard tickets are fully tradable with no restrictions, and allow the owner complete control and discretion over how the ticket is ultimately used (e.g. enter the venue for the event, trade the ticket at market value, or assign the ticket). Also, standard tickets include the applicable ticket property rights that are inherent  
10 to the specific ticket purchased, as described hereinafter.

Restricted tickets only provide access to an event for a patron. These restricted tickets might typically be used in the following situations: college students at college athletic events, employees of the venue or promoter, fan club members for certain entertainers, and the like. Restricted tickets can also be used  
15 for promotional give-aways, selling tickets to events where a face value or a discount to market value is desired by the entertainer/promoter, reserved tickets for certain patrons, etc. Restricted tickets allow patrons access to the event and possibly select property rights such as parking, but they do not possess any other typical ticket rights. Restricted tickets could be inhibited from being traded on the  
20 secondary ticket market.

Other restrictions, as deemed necessary, could also be placed on restricted tickets. For example, since the venue owner will probably not want to provide an incentive for permanent seat license (PSL) holders to retain their seat licenses and make unjustified profits by trading their tickets on a secondary exchange, the  
25 venue owner can restrict seating license tickets so that they can only be traded at their face value, rather than at market value. Venue owners could then provide seat license holders with an option to sell their seating license back to the venue owner or continue holding their seating license and all the rights the seat license includes.

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Temporary tickets can be used for special circumstances. Three exemplary types of temporary tickets include gift tickets, event tickets, and sub-account tickets. Gift tickets can be made available for members and non-members to give to a party of their choice. Event tickets are tickets for patrons who are not  
5 members of the system but still want to attend an event. Sub-account tickets can be used by families (or groups or acquaintances) who often attend events together and do not want to have a large number of membership numbers that have to be entered every time they purchase a group of tickets to sit together. Sub-accounts are linked to a member's primary account. For example, a member may be  
10 assigned the membership number "0001" for the primary account. The various sub-accounts under that primary account are then designated by the numbers "0001-01", "0001-02", "0001-03", etc. The owner of the primary account has control over all of the sub-accounts, and all charges made on the sub-accounts, if permitted, are assessed to the primary account.

15 Temporary tickets can have the following privileges associated with them:

- ability to bid for general admission tickets for any event initially sold on the system. Patrons who are not members of the system are not entitled to place a bid for any tickets other than general admission tickets;
- ability to buy and sell any tickets for events that are traded on the system's  
20 secondary market. Sub-account tickets under a full-time member may not have these trading privileges;
- entry into the venue, if a ticket is owned;
- all property rights (e.g., guaranteed parking, etc.) associated with the ticket the patron buys for that particular event.

25 In addition to different types of tickets, different categories of full-time membership can be offered. A basic membership can provide the following privileges:

- ability to bid for tickets for any event initially sold on the system. This includes general admission, season tickets, luxury boxes, etc.;

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- ability to buy and sell any tickets for events that are traded on the secondary market on a member's own account;
- entry into the venue, if a ticket is owned;
- all property rights (e.g., guaranteed parking, etc.) associated with the type of ticket the patron buys for that particular event;
- ability to select and rank personal seating preferences and then have these seating preferences considered when seats are assigned;
- lower transaction fees when purchasing tickets;
- ability to use the membership card to purchase merchandise and concessions at the venue at selected concession and merchandising booths;
- participate in promotional offerings during an event by the venue owner such as special discounts, two-for-one promotions, etc.

In addition, members can pay an annual fee which entitles them to a higher, or premium, level of membership. Premium members can enjoy the following additional membership privileges:

- ability to participate in co-promotional activities for relevant products such as sporting goods, clothing, and the like. Patrons may be entitled to cash discounts at affiliated shopping outlets;
- free services that are offered by strategic alliance partners, such as Internet-based sports services, and the like;
- random drawing promotional activities where the patron will have the ability to win back-stage passes, meet with the entertainers/players, etc.

The following types of devices, with their related privileges, can be used for entry into each of the affiliated venues:

- Smart cards, PDAs, wireless telephones, contactless cards, bar-coded and magnetic stripe cards, RFID devices, biometric features, and the like can be used by full-time members, regardless of the type of membership. The devices can be used to: (a) provide entry into the venue, (b) provide entry into guaranteed

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parking, (c) allow patrons to purchase either merchandise or concessions at the venue; etc.

- any of these foregoing types of devices can be employed for all non-members who want to attend an event at a venue that uses the system's services, as well as gift certificate cards (gift tickets), affiliate cards for full-time members (sub-account tickets), and infrequent patrons who want to purchase their tickets on an event-by-event basis (event tickets), rather than become full-time members. The privileges associated with these tickets comprise entry into the venue and any related property rights that are associated with the type of ticket the patron owns.

Membership rights and privileges are distinct from ticket property rights. Ticket property rights are particular to a specific event and constitute the basic commodities that can be purchased and traded by members of the system. Tickets need not be physical in nature, they can be electronic proxies for the associated rights. Membership rights are benefits that the patron receives, and these rights can not be traded. Membership rights vary by the type of membership the patron possesses.

Ticket property rights are linked to a patron's membership. This link is unique and each membership is only allowed one set of ticket property rights for each individual event. The ticket has all the property rights associated with conventional physical tickets, plus more. Identical to physical tickets, ticket property rights authorize entry into the entertainment event. This is the most basic of property rights. Tickets might also possess other property rights such as entry into guaranteed parking, entry into luxury boxes, and various benefits provided by the venue owner at the venue.

Season tickets present a specialized case of the general situation described thus far. Whether season ticket holders have purchased a seating license or not, there is likely to be a general feeling by season ticket holders, and even venue owners, that having a season ticket entitles that individual to priority on buying a



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season ticket the following season, even though it is a new season. While this property right is perceived rather than actual (other than in the case of seat licenses), a value can be attributed to this right without jeopardizing the intangible goodwill this inherent right conveys to season ticket owners. If this inherent  
5 property right does not continue, existing season ticket owners might feel that the goodwill they have demonstrated for a franchise (e.g., purchased season tickets in good and bad times) has not been acknowledged or rewarded.

Existing season ticket owners will likely want to be differentiated from new bidders for season tickets, rather than be considered just another person in a pool  
10 of bidders. In fact, it is likely that season ticket holders will want to be differentiated in a way that is directly beneficial to them.

For those venue owners who want to provide such an inherent property right to their existing season ticket owners, the following approach can be employed. All patrons who are interested in renewing their season tickets for their current  
15 quality of seat section can be required to submit a bid during the market making process. By requiring all interested patrons (e.g. existing and new) to submit bids for season tickets, venue owners will obtain a more robust market value for the tickets. Once the market value is determined for a particular section's season tickets, existing season ticket holders from prior years who did not bid enough to  
20 meet or exceed the market value price for the tickets, but did bid enough to be within a predetermined percentage of the fair market value, would have an option (e.g. right of first refusal) to renew their season tickets at the fair market value. The existing season ticket holders have a limited period of time following the closing of the bidding window to exercise this option. By encouraging existing  
25 season ticket holders to be within a certain percentage, e.g., 20%, of the fair market value price, the existing season ticket holders will likely submit a bid that is reasonable. When an existing season ticket owner's bid is not reasonable (e.g., within 20% of the fair market value), it is probably fair to expect that the existing season ticket owner should lose this valuable inherent property right, since he or

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she was likely understating the bid. Conversely, those existing season ticket holders who bid at or above the market value receive their tickets automatically. If a season ticket holder does not continue to purchase a season ticket, or changes the quality of seat from the prior season, this option ceases for future seasons.

5           The electronic ticket can provide parking privileges identical to those which are conventionally offered. The parking property right travels along with the ticket being purchased/sold, so that the owner of the ticket in question also owns the parking property right. In other words, the parking right is bundled with the entry property right for certain tickets.

10           As discussed previously, the parking attendants can have radio frequency readers 36 that allow the attendants to instantaneously read a membership identification device and also determine whether the member has parking privileges. As vehicles enter the parking area of the venue, the patrons provide their membership devices to the parking attendant, who reads the device with the  
15           reader. Alternatively, the device could be placed on the dashboard of the vehicle or hung on the mirror, and be automatically read while it remains in the vehicle. The reader communicates with the local payment server 32 and sends back a verification notice that this particular ticket holder is entitled to park in the parking area. As the patrons enter the parking area, the parking attendant can provide the  
20           patrons with physical markers indicating that they are allowed to park in a reserved area, if desired.

          As with the electronic tickets used for entry into the venue, this form of electronic ticket for parking results in increased liquidity and transferability of ticket property rights. Once a patron enters the parking area, he or she will lose  
25           the ability to trade the ticket since a portion of the property right that is affiliated with the ticket for that particular event has been used. This property is akin to that of a ticket holder who actually enters the venue itself; once a patron enters the venue all trading privileges for the ticket cease and desist.

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Playoff tickets present another type of special case. Regular season ticket holders might be upset if, at the end of a season, they are required to reenter a normal ticket pool and bid for the opportunity to attend playoff games after they have spent an entire season attending games and they are required to reenter the bidding process for purchasing tickets to playoff events. As part of a season ticket package (e.g., to give people a reason to purchase season tickets), the venue owner can provide all season ticket purchasers with the right to purchase playoff tickets (at a fixed face value or discount to market value for their particular season ticket seat - akin to conventional preprinted face values) for the team's playoff tickets for each phase of the playoffs. The face value price or level of discount to market price for each ticket could increase or decrease, respectively, with each round of the playoffs.

By providing this option to purchase pre-priced playoff tickets to season ticket holders only, it allows the venue owner to significantly differentiate the season ticket package from general admission tickets. Although there is always a tradeoff between selling the option and collecting the option value and strike price vs. waiting to see if the venue owner's team makes the playoffs and selling the tickets at their actual market value, the venue owner strongly differentiates season tickets from general admission tickets by providing this property right at the beginning of the season. Also, since this option can not be split up over various games, it is a unique ticket property right for season ticket holders only.

The option to purchase playoff tickets for season ticket holders can automatically be part of the season ticket's property rights, translating into a higher market value on season tickets for the venue owner. This higher initial ticket market value in turn results in higher ticket sales proceeds to the venue owner upon the initial sale of tickets to patrons, irrespective of whether the team makes the playoffs.

There are many incentives for patrons to provide each patron's membership number when purchasing tickets for a group of people rather than using

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sub-accounts, including the ability for each patron to use their membership device at the venue to make purchases, lower transaction fees, ability for each patron to control a ticket when the ticket is linked to a unique membership number, etc. It may also be desirable to make it easy for patrons to do so rather than having to  
5 memorize or collect all of the membership numbers prior to placing an order.

At the time a patron registers, or at any point in the future thereafter, each patron can have the ability to list the name and membership numbers of other members for whom they will typically purchase tickets or provide notification that they have extra tickets available. This can be done by the patron knowing and  
10 directly entering the other members' required information, or by providing an inquiry and search capability where the person building the list can enter certain critical information (e.g., name, address, member number, etc.) that will search the database 22 and provide a list of potential matches, allowing the patron to select the list members based upon the results of the search. Including other  
15 members on a given patron's list will only allow the owner of that list to purchase a ticket for another member, but not to sell tickets, purchase concessions, etc. All members placed on someone else's list can be notified that a certain member has included them on a list of likely persons for whom a ticket is to be purchased. For example, an e-mail, pager alert or instant message can be sent to each of the listed  
20 members when a patron selects them for inclusion on a list.

Approval for inclusion on any member's list must be provided by the member being named on the list before the corresponding billing and electronic ticket property rights can be directly assigned to the list member. Only after inclusion on a list is approved by the list member can the list member be billed for  
25 charges incurred as a result of the primary member's order. Also, electronic ticket property rights are not assigned without approval. However, electronic ticket property rights can be transferred from one member to another at any point in time after an electronic ticket is purchased.

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If a member places an order for another member, and the member for whom the electronic ticket is being purchased has not yet approved his or her inclusion on the purchasing member's list, then the member who is placing the initial order or secondary trading order is billed for all acquired 'unapproved' electronic tickets with all property rights associated with each unapproved electronic ticket defaulting to one of the order placer's subaccount numbers. This means that all electronic tickets (order placer's electronic ticket, intended subaccount electronic tickets, and unapproved electronic ticket orders), other than properly approved list orders, will be billed to and be under the control of the member placing the order, although the property rights for each electronic ticket will be assigned to individual member and subaccount numbers.

In addition to the primary member's approach outlined above for placing other members on a list, the list members can themselves send a request to be automatically added or deleted from any list at any point in time. In addition, the primary member can, with or without approval from a list member, remove any member from his or her list.

Whether a member is placed or elects to be placed on another member's list, the member being placed on the list has the option of approving his or her inclusion on another member's list for only one specified event or for any event. If the member is only approved for a particular event, once the event is complete that member's information disappears from the order placer's list.

Members are also able to create, name, and combine unlimited numbers of list members who typically purchase electronic tickets or receive notifications together. Many e-mail programs allow 'group mailings' to be predefined today. This grouping might consist of a group of family or friends that typically attend events together, a grouping of a company's favorite clients for entertainment purposes, etc. The ticket exchange system keeps a history for each list member showing how many notifications, electronic ticket purchases, electronic ticket transfers, etc. the primary member has carried out for that particular list member.

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When a patron purchases an electronic ticket for a list member, an automatic list dialogue box appears, showing (a) the primary member's list members, (b) an indication whether the list members have been approved or are pending approval, and (c) whether they are approved for a specific or any event. The list member's membership number need not be shown on the list when placing orders because patrons do not typically know (or care about) their list members' membership number, other than when originally developing their list. However, the system stores a corresponding membership number in the background for each list member shown on a list. As an example, one list member's listing in the dialogue box could be "John Smith - Any" or "John Smith - MLBNYY0712" (particular event identifier).

The list prioritizes the order in which list members are listed, based upon how many electronic tickets the primary member and list customer have purchased for each other in the past or if the list member has been identified for a particular event for which the primary member is currently placing an order. The primary member can place an order for his or her own electronic tickets and then either tell a call center operator or use the Internet to click and drag members of the list into their order box if they are ordering more than one electronic ticket. The maximum number of sub-accounts can be included at the bottom of the list box as well, so members can click and drag sub-account numbers if they desire. Once an order is placed and executed (electronic tickets are purchased), the primary member and all list members can be notified of the order either via e-mail, a toll-free or toll-bearing telephone number that is menu driven, an automated telephone calling service, first-class mail, or the like. The primary member will also have a record of the order at the time the original order is placed.

By means of the features provided by the system, patrons have an option to select whether they want to purchase electronic tickets for other patrons (as outlined above), or notify other patrons that they have electronic tickets available to be used for an event. While the system's notification service will most likely be

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used by corporate electronic ticket holders, who may wish to transfer tickets at no charge to the recipients for entertainment or goodwill purposes, all members will have the opportunity to use this notification service. In the case of the notification service, approval by the list member is not required to be included on the primary member's notification list. Of course, members would want to encourage their list members to be registered members prior to placing them on their notification service list, however the primary member could still list a non-member on their notification service list. If this non-member were to eventually use the primary member's electronic ticket, the non-member would have to use a temporary electronic ticket or become a member.

When subscribing to the system's notification service, members and their list members will follow the same approach that is outlined above for entering the required information for each list member. However, the required personal information for the notification service will also include the list member's contact information such as an Instant Messenger ID, e-mail address, pager number, and the like, depending upon the method of communication the list member prefers for notification. In addition, if the method of notification allows, each primary member will be able to customize a number of notification announcements and select the announcement they wish to use for each notification. If the primary member does not want to customize the message, a default announcement can be employed, such as "Company XYZ would like to offer you X free electronic tickets to 'event name' on 'event date'. If you are interested and able to use these electronic tickets, please call xxx-xxx-xxxx or e-mail us at xxxx@yyyy.com. Thank you."

Notification of electronic ticket availability can be done prior to selling or assigning electronic tickets to a notice service list member. However, assigning or selling an electronic ticket to any list member by the primary member is preferably only done by the primary member himself or herself. In other words, the system facilitates the notification service, while all transactions for electronic tickets are

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executed by members themselves. Members are able to prioritize the order in which their notification service list members or group of members are listed in their notification service list dialogue box. This provides each primary member with the ability to use their own criteria for ranking list members for their notification service.

The overall flow of operations that occur within the electronic ticket exchange system is illustrated in Figures 5-8. Figure 5 depicts the events which occur in connection with an initial ticket offering. At step 60, information regarding an upcoming event is published, and a bidding window is opened at step 62. Once the window has closed, the market system 50 determines the initial ticket prices for each level of seating at step 64. For each patron whose bid was at or above the established price, the payment system 24 debits the patron's account at step 66, and an electronic ticket token is transferred to each such patron's account. The outcome of the initial ticket offering is then communicated to the successful bidders, at step 68. If desired, data relating to the various bids and established market prices can be stored in a suitable database for subsequent analysis.

Figure 6 illustrates the operations that take place subsequent to the initial offering. At step 70, patrons initiate the sale or purchase of tickets on a secondary market made available through the trading system 52, by any of the available access mechanisms of the patron interface 10. When a match occurs, the payment system validates the buyer's ability to perform the transaction, and then appropriately credits or debits the members' accounts at step 72. The trading system 52 completes the transaction by moving the electronic ticket token(s) from the seller's account to the purchaser's account, at step 74. The market system 50 is updated at step 76, to reflect the executed trade information. Again, the data relating to the trades can be stored for future analysis and reference.

Figure 7 illustrates the operations that occur at the initiation of the event. At step 80, seating system 48 finalizes the optimal configuration for all of the tickets



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that have been sold at a certain point. This configuration is downloaded to the entry system server 40, at step 82. As additional tickets are sold or exchanged during this time, the entry system server is updated with the appropriate seating information. Once the venue opens its gates, patrons use their identification  
5 devices to enter the parking facilities and the access-control mechanisms, at step 84. Once a device is employed at any of these points, the member identification is transmitted via a reader to the entry server at step 86, which forwards the information to the central server 26 at step 88, to prevent any further trading of the electronic ticket. The entry server 40 queries the patron's account to see if an  
10 electronic ticket token is present for the event, and authorizes access to the parking facilities and the venue, as appropriate. Alternatively, if the token is stored on the identification device itself, the appropriate information is read from the device. In those situations where seats are assigned, as the patron's identification device is read at the access-control mechanism 42, the seating map 20 is checked and the  
15 printer at the access-control point produces a physical seating assignment for the patron, at step 92.

Figure 8 depicts operations that can occur during the performance of the event. At steps 94 and 95, a concessionaire can scan a member's identification device and the universal product codes for purchased items. The price of each  
20 item is retrieved from a database at step 96, and the total amount due is calculated. This amount is provided to the local payment server 32 at step 98, where the transaction is validated. The individual transactions are queued at the local payment server, and uploaded to the primary payment server 28 at step 100. Again, the purchasing behavior of the patrons can be stored for subsequent  
25 analysis and data mining.

In the foregoing example of the invention, most of the operations are carried out at a central facility, and a portion of the processing occurs at the individual venues. It will be appreciated, however, that the processing load can be configured in different manners. For instance, all operations could be performed

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at the central location. In this case, the access-control devices and the readers communicate directly back to the central server or cluster 26. This approach may be feasible in a situation where the communication links between the venues and the central location are reliable and capable of operation at high speeds.

5        From the foregoing, therefore, it can be seen that the electronic ticket exchange system of the present invention offers a number of advantages to both the venue owner and the patron. Venue owners will be able to earn optimal total income yield for each event at the time tickets are sold. For popular events, laws of supply and demand will likely result in a higher market value for tickets upon  
10    initial sale, resulting in the venue owner receiving this money, not a ticket broker/scalper. Increased access and liquidity of tickets for each game and season tickets will likely result in a higher ticket market value. Season ticket holders have a liquid and market-driven alternative when they can not attend an event due to work, travel, or other personal reasons, likely resulting in their willingness to pay  
15    more for a season ticket. The same is true, but to a lesser extent, for general admission tickets.

Venue owners will be able to earn incremental money from event marketing investments because they can measure incremental seats and market price change in tickets directly. Enhanced franchise value results from the patron paying a fair  
20    market value for enjoying the entertainment. Patrons more likely to feel like they received a fair deal. Significantly enhanced experience for patrons will likely create increased value in the entertainment franchise's intangible goodwill.

Venue owners will significantly expand their potential patron market for each event because all potential patrons, whether full-time members of the system  
25    or not, will know that when they want a ticket for an event at one of the affiliated venues, they can simply go to the system to investigate event details such as timing, entertainers, cost per ticket for each quality of seat, etc. This comfort in obtaining a fair market value for the tickets and 100% accessibility will result in

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patrons who did not previously know how to obtain tickets being able to knowingly investigate and potentially purchase a ticket.

The size of potential patron base will be increased as a result of increased word-of-mouth due to market value pricing for lesser-known acts' tickets. Because  
5 lesser known acts will likely have a lower market value (vs. overpriced face value) for their tickets, it is likely that the base of patrons willing to pay a lower market value will increase. The venue owner will be better able to build patron loyalty, as well as significantly develop and enhance patron loyalty programs. The venue owner will also have significantly increased access to information on patron's  
10 purchasing behavior and demographic statistics. This can result in increased effectiveness of event promotional and marketing efforts as a result of improved demographic information and ability to effectively direct market. Such information provides a stronger case to demonstrate when a community does or does not support a franchise, and hence take necessary actions.

15 The system also provides increased venue yield management for both popular and less popular entertainment events. Due to the fact that the venue owner is selling attendance, rather than merely selling seats, the venue owner should experience increased economic benefits from additional patrons attending events and paying for parking, concessions, merchandise, and the like. The venue  
20 owner will have more leverage with merchandise and concession vendors due to increased yield management of venues. More people are likely to attend an event due to a more efficient (information and transaction cost) secondary market for tickets. In addition, the nuisance effect from physical ticket scalpers is eliminated.

Of course, the bidding process is likely to result in a significant variation in  
25 ticket prices for different events, depending upon their relative popularities. In contrast to conventional fixed-price ticketing arrangements, this variation could produce fluctuations in revenue flows for the venue, which cannot be accurately forecast. As a means to better manage cash flow in such a situation, the venue owner may want to purchase insurance or other types of financial hedging

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instruments which provide the ability to swap a variable income stream for one that is fixed. Hence, the venue owner has the option to assume all of the risk and reward associated with the bidding process, hedge part of the uncertainty, or insure against all of the uncertainty.

5           Another financial mechanism that can be employed is the ability to securitize a portion of the revenues that will be earned from future ticket sales, either through the bidding process or in a fixed-price format. By selling rights in revenue from future ticket sales to a third party, the venue owner can realize a portion of that income at an earlier time.

10           Patrons of entertainment at venues experience benefits as well. For instance, patrons can buy/sell/trade tickets for any event on a worldwide ticket exchange, resulting in complete information and an efficient market. Price gouging or limited information will no longer exist. At all times, every patron knows that they only have to pay a fair market value for any ticket to any entertainment event.  
15           Certain events will be more affordable for patrons to attend, expanding access to live entertainment events to the general population. Membership loyalty benefits will transfer across entertainment events and venues.

            Increased access to all events will result since patrons can purchase a ticket for any entertainment event as long as they are willing to pay a fair market value.  
20           No longer is purchasing a ticket solely a function of: (a) personal contacts, (b) a rapid dial telephone, or (c) one's time availability to stand in a queue.

            Patrons will have the ability to place bids for any season ticket for any quality of seating section. As long as the patron is willing to pay a fair market value for their season ticket, the patron can always improve upon existing season  
25           ticket seating quality. Timing of bids can be casual, since they can be changed prior to final submission, and they can be entered over a period of time, eliminating the hassles of queuing. Increased liquidity for entertainment event tickets results, since the telephone and internet will provide anyone with the opportunity to buy/sell/trade tickets for any entertainment event, without

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geographic constraints. The process for purchasing tickets goes from a very arduous process of waiting in queues, rapid dialing telephones, and frustration at selection to one of complete access and excitement.

Increased liquidity of tickets adds convenience to both event and season  
5 ticket holders, in that they are able to sell or assign a ticket in the future if  
necessary (e.g., can not attend due to other commitments, work, etc.). This  
additional convenience will increase the patron's likelihood of bidding for certain  
events and providing a fuller assessment of their perceived market value for the  
event. Specific patron preferences can be acknowledged through venue and  
10 third-party direct marketing efforts if the patron desires.

Property rights that often accompany tickets such as guaranteed parking,  
restricted seating, etc. can all be transferred with the electronic ticket and linked to  
a specific membership. Actual concession and merchandising preferences can be  
taken into account in a real-time fashion when providing the goods. Instead of  
15 having a physical ticket system that functions like cash (e.g., bearer-bond market)  
and has the accompanying risk of loss, theft, damage, counterfeit, etc., the  
electronic ticket is much more secure and based upon a patron membership and  
personal identification number. The use of electronic tickets also enhances the  
security element of the system.

20 It will be appreciated by those of ordinary skill in the art that the present  
invention can be embodied in other specific forms without departing from the spirit  
or essential characteristics thereof. For instance, in a preferred implementation of  
the invention, all of the various components described herein are integrated into a  
comprehensive electronic ticket exchange system. However, individual aspects of  
25 the system can be selectively employed without using other features described  
herein. For example, the market-making mechanism can be employed in  
conjunction with a paper ticket system, to establish an initial sale price for the  
tickets that enables the venue owner to receive the true market value for the  
tickets. Thereafter, the paper tickets can be handled in a conventional manner. In

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another implementation, electronic tickets can be sold at a pre-established face value, i.e. without initial bidding, and thereafter traded on a secondary market. Similarly, the dynamic seat assignment can be an optional feature. For instance, seats can be assigned at the time the tickets are purchased, e.g. upon notification  
5 that an initial bid was successful, rather than await an optimal configuration at a time closer to the start of the event. Other variations of the features of the system will also be apparent.

Furthermore, in a preferred implementation, the electronic ticket exchange system of the present invention is employed in connection with all of the tickets for  
10 every event at a venue. In some cases, however, it may be preferable to employ the system in a selective manner. For instance, tickets may be sold and exchanged through the system for certain events, e.g. special, non-recurring events such as concerts, shows, etc., but not for other, more regular events. In another  
15 implementation, the features of the system can be selectively used for certain qualities of seating, such as season tickets and suites, while using more conventional ticketing approaches for general admission tickets. Alternatively, the system might be employed for only those tickets which are not sold by the venue's box office. Other variations in the implementation of the invention are also possible.

20 The presently disclosed embodiments are therefore considered in all respects to be illustrative, and not restrictive. The scope of the invention is indicated by the appended claims, rather than the foregoing description, and all changes that come within the meaning and range of equivalence thereof are intended to be embraced therein.

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**What is claimed is:**

1. A system for the sale and exchange of tickets for entertainment events, comprising:
  - a market-making system which establishes a price for entertainment event tickets based upon bids submitted by patrons;
  - a patron interface via which patrons can submit bids for event tickets and purchase electronic tickets for entertainment events;
  - a storage system for storing information regarding electronic tickets purchased by patrons;
  - 10 a trading system via which patrons having electronic tickets stored in said storage system can transfer the electronic tickets to other patrons; and
  - an entry system which is responsive to the presentation of information pertaining to a patron to determine whether that patron is an owner of an electronic ticket for a given event, and to permit those patrons who are owners of electronic tickets to enter the venue at which the event is being presented.
- 15 2. The system of claim 1 further including a seating system which determines an allocation of seats at said venue for electronic tickets for the event.
3. The system of claim 2 wherein the seats are allocated on the basis of preferences submitted by the patrons.
- 20 4. The system of claim 2 wherein said entry system provides patrons with an identification of seats that are allocated to their electronic tickets at the time that entry is permitted.

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5. The system of claim 1 including a payment system which stores information regarding payment accounts of patrons and automatically debits said accounts for purchases of electronic tickets made by patrons.

5 6. The system of claim 5 wherein said payment system automatically credits and debits said payment accounts, as appropriate, for transfers of tickets carried out via said trading system.

7. The system of claim 5 wherein said payment system automatically debits said payment accounts for purchases of items made by patrons at the venue.

10 8. The system of claim 1 further including identification devices which identify patrons as members of an organization affiliated with said system, and which are used to present said information to the entry system.

9. The system of claim 8 wherein said identification devices are also used to provide access to facilities associated with a venue.

10. The system claim 9 wherein said facilities including parking sites.

15 11. The system of claim 8 wherein said identification devices are also used to purchase items at the venues.

12. The system of claim 1 wherein a venue contains plural levels of seating quality, and said market-making system establishes a respective price for each level of seating quality.

20 13. A system for the sale and exchange of tickets for entertainment events, comprising:



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a patron interface via which patrons can purchase electronic tickets for entertainment events;

a storage system for storing information regarding electronic tickets purchased by patrons;

5 a trading system via which patrons having electronic tickets stored in said storage system can transfer the electronic tickets to other patrons;

a seating system which determines an allocation of seats at said venue for electronic tickets for the event; and

10 an entry system which is responsive to the presentation of information pertaining to a patron to determine whether that patron is an owner of an electronic ticket for a given event, and to permit those patrons who are owners of electronic tickets to enter the venue at which the event is being presented.

14. The system of claim 13 wherein the seats are allocated on the basis of preferences submitted by the patrons.

15 15. The system of claim 13 wherein said entry system provides patrons with an identification of seats that are allocated to their electronic tickets at the time that entry is permitted.

16. The system of claim 13 including a payment system which stores information regarding payment accounts of patrons and automatically debits said  
20 accounts for purchases of electronic tickets made by patrons.

17. The system of claim 16 wherein said payment system automatically credits and debits said payment accounts, as appropriate for transfers of tickets carried out via said trading system.

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18. The system of claim 16 wherein said payment system automatically debits said payment accounts for purchases of items made by patrons at the venue.

19. The system of claim 13 further including identification devices which identify patrons as members of an organization affiliated with said system, and  
5 which are used to present said information to the entry system.

20. The system of claim 19 wherein said identification devices are also used to provide access to facilities associated with a venue.

21. The system claim 20 wherein said facilities including parking sites.

22. The system of claim 19 wherein said identification devices are also  
10 used to purchase items at the venues.

23. The system of claim 13 wherein a venue contains plural levels of seating quality, and said trading system establishes a respective market for each level of seating quality.

24. A system for the sale and exchange of tickets for entertainment  
15 events, comprising:

a patron interface via which patrons can purchase electronic tickets for entertainment events;

a storage system for storing information regarding electronic tickets purchased by patrons;

20 a trading system via which patrons having electronic tickets stored in said storage system can transfer the electronic tickets to other patrons;

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a payment system which stores information regarding payment accounts of patrons and automatically debits and credits said accounts for purchases and trades of electronic tickets made by patrons; and

an entry system which is responsive to the presentation of information  
5 pertaining to a patron to determine whether that patron is an owner of an electronic ticket for a given event, and to permit those patrons who are owners of electronic tickets to enter the venue at which the event is being presented.

25. The system of claim 24 further including a seating system which determines an allocation of seats at said venue for electronic tickets for the event.

10 26. The system of claim 25 wherein the seats are allocated on the basis of preferences submitted by the patrons.

27. The system of claim 25 wherein said entry system provides patrons with an identification of seats that are allocated to their electronic tickets at the time that entry is permitted.

15 28. The system of claim 24 wherein said payment system automatically debits said payment accounts for purchases of items made by patrons at the venue.

29. The system of claim 24 further including identification devices which identify patrons as members of an organization affiliated with said system, and which are used to present said information to the entry system.

20 30. The system of claim 29 wherein said identification devices are also used to provide access to facilities associated with a venue.

31. The system of claim 30 wherein said facilities including parking sites.

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32. The system of claim 29 wherein said identification devices are also used to purchase items at the venues.

33. The system of claim 24 wherein a venue contains plural levels of seating quality, and said trading system establishes a respective market for each  
5 level of seating quality.

34. A system for the sale of tickets for entertainment events, comprising:  
a patron interface via which patrons can submit bids for event tickets and purchase tickets for entertainment events;  
a market-making system which establishes a price for entertainment  
10 event tickets based upon bids submitted by patrons; and  
a notification mechanism which informs patrons who submit bids at or above the established price that their bids were successful.

35. The system of claim 34 further including a trading system via which patrons who have purchased tickets can transfer the tickets to other patrons.

15 36. The system of claim 35 including a payment system which stores information regarding payment accounts of patrons and automatically debits said accounts for purchases of tickets made by patrons.

37. The system of claim 36 wherein said payment system automatically credits and debits said payment accounts, as appropriate, for transfers of tickets  
20 carried out via said trading system.

38. The system of claim 34 wherein a venue contains plural levels of seating quality, and said market-making system establishes a respective price for each level of seating quality.

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39. A system for the sale of tickets for entertainment events, comprising:  
a patron interface via which patrons can purchase tickets for  
entertainment events;

5 a seating system which determines an allocation of seats at said venue  
for tickets for the event; and

an entry system which permits those patrons who are owners of  
tickets to enter the venue at which the event is being presented, and provides  
patrons with an identification of seats that are allocated to their tickets at the time  
that entry is permitted.

10 40. The system of claim 39 wherein the seats are allocated on the basis of  
preferences submitted by the patrons.

41. The system of claim 1 further including a notification system which  
automatically provides a notification to individuals that a patron has purchased  
tickets to an event and such tickets are available to be transferred to said  
15 individuals.

42. The system of claim 41 wherein said notification is provided to each  
individual by means of a communication medium that is associated with that  
individual and stored in said storage system.

43. The system of claim 1 wherein said storage system stores information  
20 relating to patrons' interaction with the system, that can be analyzed for marketing  
efforts based upon patron behavior.

44. The system of claim 43 wherein said storage system also stores  
information relating to patron demographics.

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45. The system of claim 43 wherein said storage system stores information relating to items purchased by patrons.

46. The system of claim 1 wherein said storage system includes a central server which stores information that identifies all electronic tickets purchased by patrons for an event.

47. The system of claim 46 wherein said central server is accessible by said entry system to determine whether a given patron is an owner of an electronic ticket.

48. The system of claim 1 wherein said patron interface enables a patron to purchase tickets for other patrons as part of a group transaction.

49. The system of claim 48 wherein said interface displays a list of patrons who are affiliated with a given patron, to permit said given patron to selectively purchase tickets for any one or more of said listed patrons at the time of placing a bid and/or purchasing tickets to an event.

50. The system of claim 49 wherein said interface permits individual patrons to selectively add or delete their names on lists created for other patrons.

51. The system of claim 1 wherein said trading system provides for direct patron-to-patron payments for the sale of a ticket from one patron to another.

52. The system of claim 1 wherein said market-making system provides patrons who qualify as season ticket holders with a right of first refusal to purchase tickets for a new season at the established price if their bids were below said price.

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53. The system of claim 52 wherein said right is only provided to season ticket holders whose bids are within a predetermined range of said established price.

5 54. The system of claim 52 wherein said market-making system provides season ticket holders with the right to purchase playoff tickets at a fixed price value, without bidding.

55. The system of claim 13 further including a notification system which automatically provides a notification to individuals that a patron has purchased tickets to an event and such tickets are available to be transferred to said  
10 individuals.

56. The system of claim 55 wherein said notification is provided to each individual by means of a communication medium that is associated with that individual and stored in said storage system.

57. The system of claim 13 wherein said storage system stores  
15 information relating to patrons' interaction with the system, that can be analyzed for marketing efforts based upon patrons' purchasing behavior.

58. The system of claim 57 wherein said storage system also stores information relating to patron demographics.

59. The system of claim 57 wherein said storage system stores  
20 information relating to items purchased by patrons.

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60. The system of claim 13 wherein said storage system includes a central server which stores information that identifies all electronic tickets purchased by patrons for an event.

5 61. The system of claim 60 wherein said central server is accessible by said entry system to determine whether a given patron is an owner of an electronic ticket.

62. The system of claim 13 wherein said patron interface enables a patron to purchase tickets for other patrons as part of a group transaction.

10 63. The system of claim 62 wherein said interface displays a list of patrons who are affiliated with a given patron, to permit said given patron to selectively purchase tickets for any one or more of said listed patrons at the time of purchasing tickets to an event.

64. The system of claim 63 wherein said interface permits individual patrons to selectively add or delete their names on lists created for other patrons.

15 65. The system of claim 13 wherein said trading system provides for direct patron-to-patron payments for the sale of a ticket from one patron to another.

20 66. The system of claim 34 wherein said market-making system provides patrons who qualify as season ticket holders with a right of first refusal to purchase tickets for a new season at the established price if their bids were below said price.



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67. The system of claim 66 wherein said right is only provided to season ticket holders whose bids are within a predetermined range of said established price.

5 68. The system of claim 66 wherein said market-making system provides season ticket holders with the right to purchase playoff tickets at a fixed price value, without bidding.

69. A system for the sale and dissemination of tickets for entertainment events, comprising:

10 a patron interface via which patrons can purchase tickets for entertainment events;

a storage system for storing information regarding tickets purchased by patrons;

15 a notification system which automatically provides a notification to individuals that a patron has purchased tickets to an event and such tickets are available to be transferred to said individuals; and

an entry system which is responsive to the presentation of information pertaining to an individual to determine whether that individual is a valid holder of a ticket for a given event, and to permit those individuals who are valid holders of electronic tickets to enter the venue at which the event is being presented.

20 70. The system of claim 69 wherein said notification is provided to each individual by means of a communication medium that is associated with that individual and stored in said storage system.

71. A system for the sale of tickets for entertainment events, comprising:

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a patron interface via which patrons can purchase tickets to entertainment events for both themselves and other patrons as part of a group transaction;

5 a storage system for storing information regarding tickets purchased by patrons; and

an entry system which is responsive to the presentation of information pertaining to a patron to determine whether that patron is an owner of an electronic ticket for a given event, and to permit those patrons who are owners of electronic tickets to enter the venue at which the event is being presented.

10 72. The system of claim 71 wherein said interface displays a list of patrons who are affiliated with a given patron, to permit said given patron to selectively purchase tickets for any one or more of said listed patrons at the time of purchasing tickets to an event.

15 73. The system of claim 72 wherein said interface permits individual patrons to selectively add or delete their names on lists created for other patrons.

74. A system for the sale of tickets for entertainment events, comprising:  
a patron interface via which patrons can submit bids for event tickets and purchase tickets for entertainment events;

20 a market-making system which establishes a price for entertainment event tickets based upon bids submitted by patrons; and

a notification mechanism which informs patrons who submit bids at or above the established price that their bids were successful and provides patrons who qualify as season ticket holders with a right of first refusal to purchase tickets for a new season at the established price if their bids were below said established price.  
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75. The system of claim 74 wherein said right is only provided to season ticket holders whose bids are within a predetermined range of said established price.

76. The system of claim 74 wherein said market-making system provides season ticket holders with the right to purchase playoff tickets at a fixed price value, without bidding.

77. A system for controlling access to entertainment events, comprising:  
a patron interface via which patrons can enter information which authorizes them for access to at least one entertainment event;  
a storage system for storing information regarding the patrons who are authorized for access to said event; and  
an entry system which is responsive to the presentation of information pertaining to a patron to check the information stored in said storage system and determine whether that patron is authorized for access to said event, and to permit those patrons who are authorized to enter a venue at which the event is being presented.

78. The system of claim 8, wherein the identification device is selected from the group comprising wireless telephones, PDAs, RFD devices, smart cards and magnetic cards.

79. The system of claim 19, wherein the identification device is selected from the group comprising wireless telephones, PDAs, RFD devices, smart cards and magnetic cards.

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80. The system of claim 29, wherein the identification device is selected from the group comprising wireless telephones, PDAs, RFD devices, smart cards and magnetic cards.

5 81. The system of claim 1 wherein said storage system stores a token that identifies an electronic ticket purchased by a patron, and said entry system determines whether a patron is an owner of an electronic ticket by detecting whether said storage system has a token stored in association with the patron.

10 82. The system of claim 81 wherein said storage system stores information in connection with a first patron that associates said first patron with a given token, and said trading system transfers said information from said first patron to a second patron when said first patron trades the electronic ticket to the second patron.

15 83. The system of claim 81 wherein said token identifies the patron who purchased the electronic ticket, and said trading system cancels said token and creates a new token that identifies a second patron when the electronic ticket is transferred to said second patron.

20 84. The system of claim 81 further including means for enabling a purchasing patron to transfer ownership of a purchased electronic ticket to a second patron, and for associating said token with said second patron upon such a transfer.

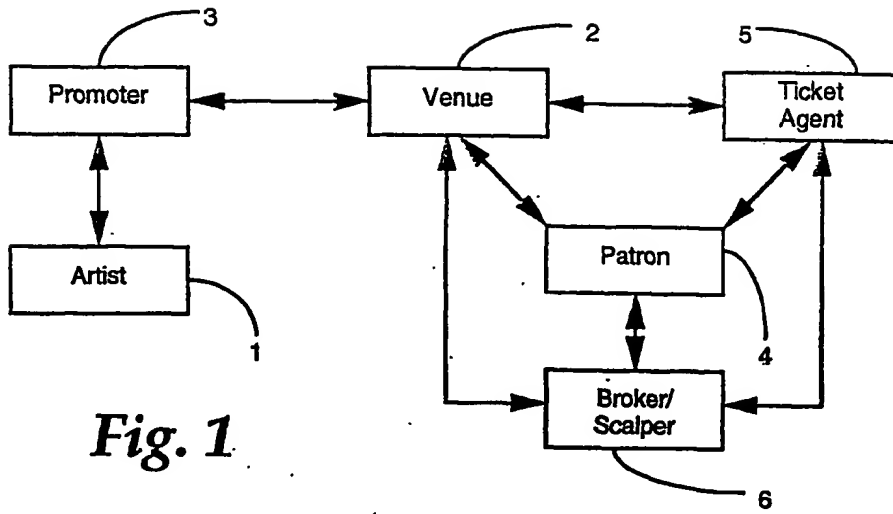
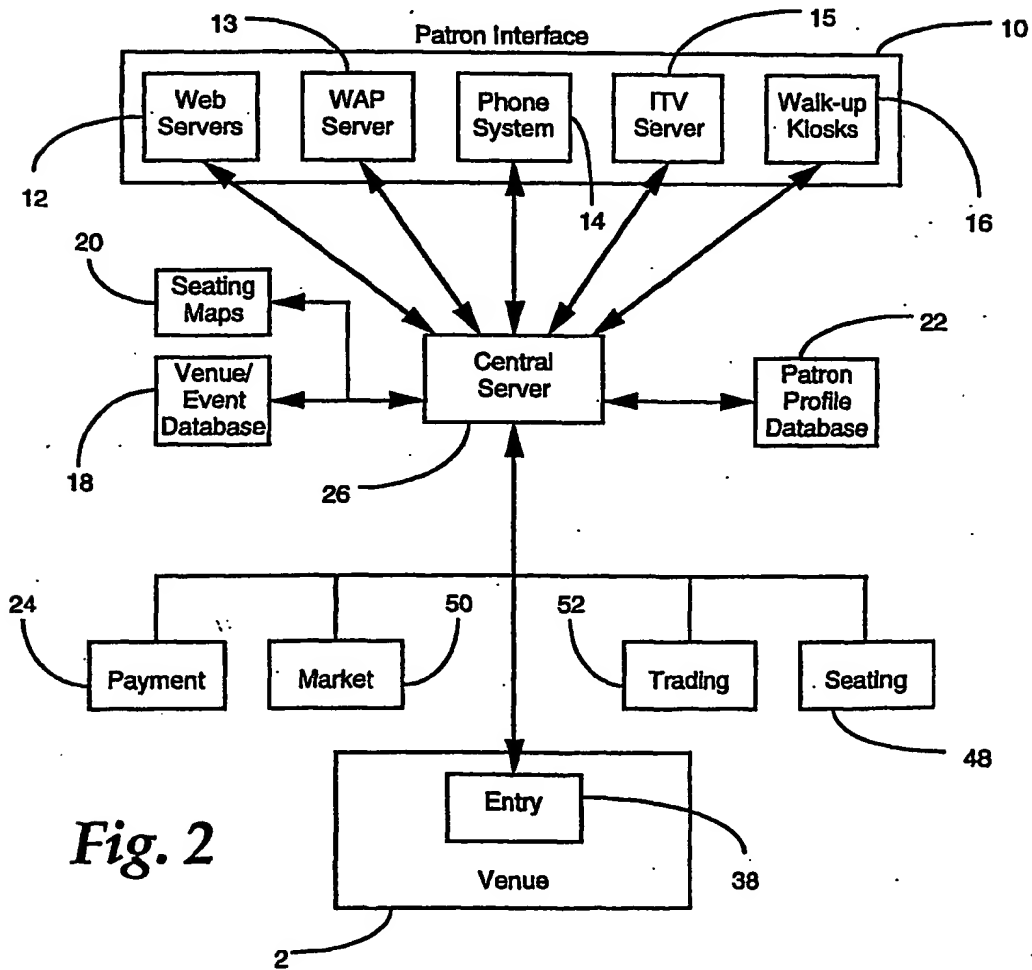
85. The system of claim 8 wherein said identification devices include a memory that stores a token which identifies that a member has purchased an electronic ticket, and said entry system determines whether a patron is an owner of

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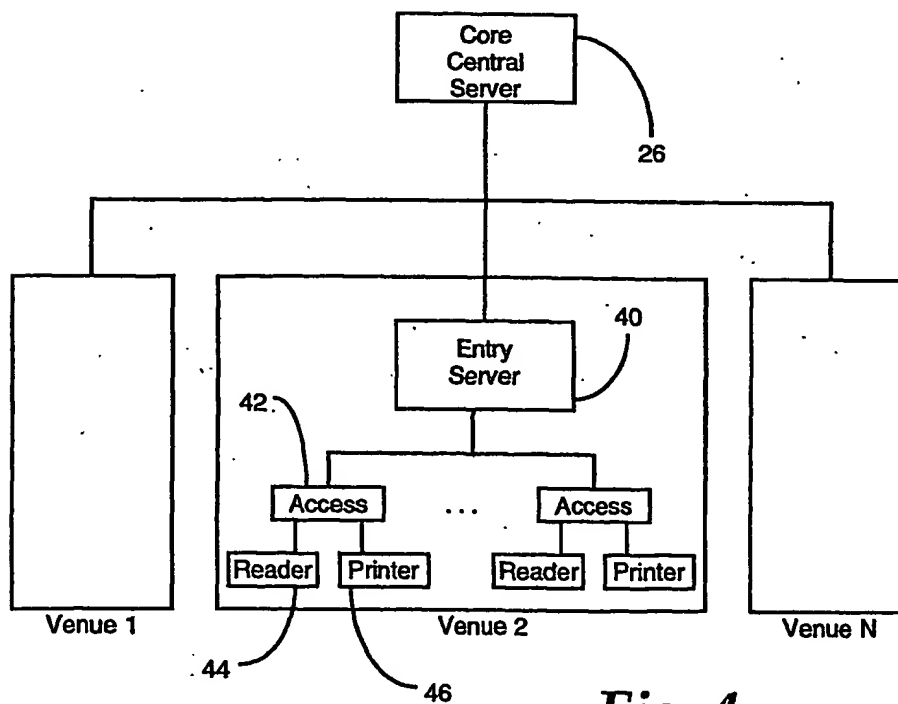
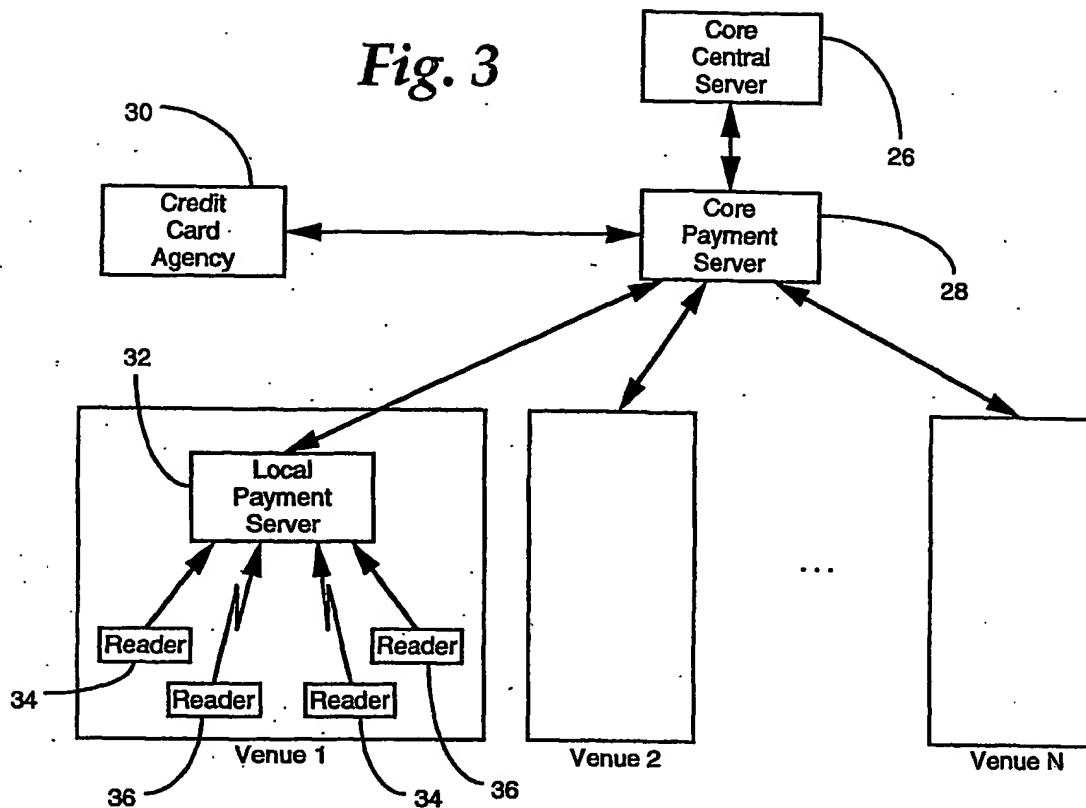
an electronic ticket by detecting whether a token is stored in an identification device.

86. The system of claim 12 or 38, wherein said trading system provides a respective market for each level of seating quality.

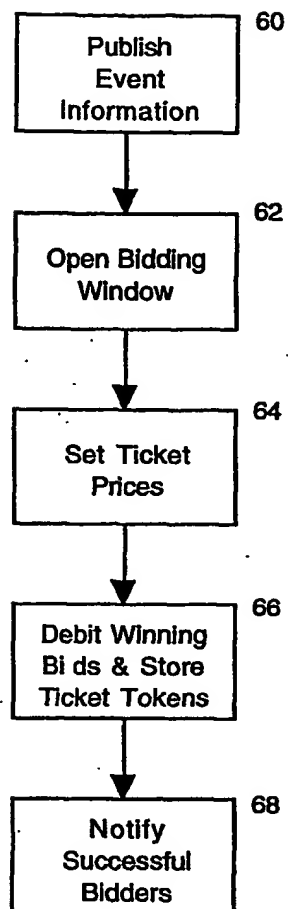
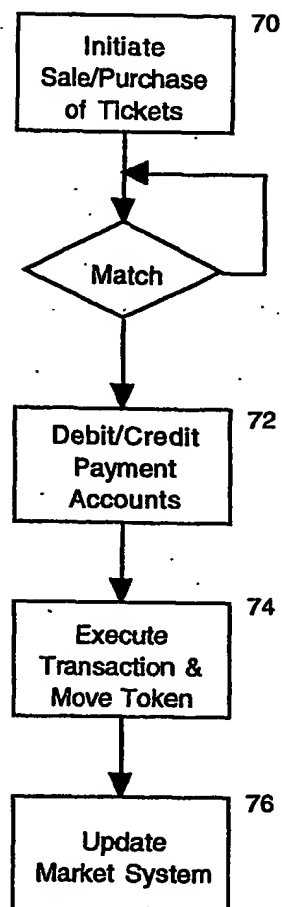
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*Fig. 1**Fig. 2*

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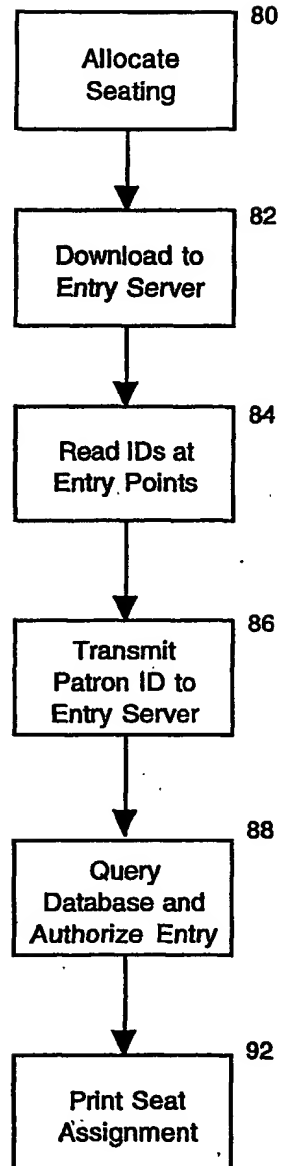
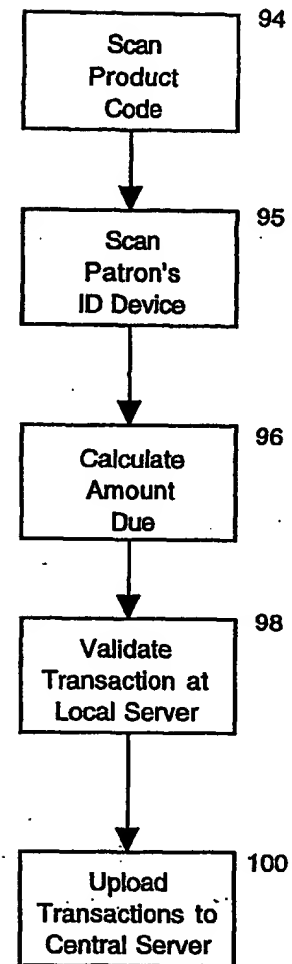
*Fig. 3**Fig. 4*

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*Fig. 5**Fig. 6*



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*Fig. 7**Fig. 8*